

The Iron Age

A Review of the Hardware and Metal Trades.

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Baker's Rotary Blower.

This blower is made entirely of iron. The cylindrical portion or case is bored out and faced on the ends; the heads of the machine or ends upon which the bearings are bolted are also faced off true; the case is secured to the ends by bolts, and when in exact position the ends are doweled so that when the case is removed it can be returned to its proper position without much trouble or delay; the base is cast in one piece and faced on its upper side, and bolted firmly to the ends of the machine; the drums are each one solid iron casting, turned up true and balanced, thus insuring closeness, and, at the same time, steadiness when running; the two lower drums are slotted their entire length, to allow the wing of the central drum to pass; these openings or slots are made considerably wider than is needed for the passage of the wings; this is done to insure perfect freedom of action, and, at the same time, to remove the danger of the wings coming in contact when entering or leaving. As each drum only acts as abutments alternately, the power required to drive them is merely to overcome the friction of the journals.

The wings of the central drum are faced off and bolted on firmly, and are cast in the requisite form to insure the greatest strength in proportion to their weight. The gearing, which is made exceedingly strong, is only intended to keep the drums in proper position. The bearings and journals are made extra large, to secure as large a bearing surface as possible, and to give to the journals a great degree of strength, so as to prevent them from springing in the bearings, and to overcome rapid wear. A shield is placed over the gears to prevent accidents. There is only one pulley to each machine, and as this is made with a diameter large enough to give the belt a good running speed, and with breadth amply sufficient for the purpose, the necessity of furnishing extra belts, pulleys, counter shafts, etc., is avoided and the expense saved. The great trouble, heretofore, has been to build a rotary pressure blower in few parts, of sufficient strength and ease of motion to stand the work they generally receive. In the Baker blower the working parts are made exceedingly strong, and there is no point in actual contact, (although working very close) in its internal movements; hence, the tendency to hammer itself apart is entirely removed. As there is no material to shrink in dry weather, or to expand in wet, nor bolts and nuts to become loose, the internal working parts of the blower will not require replacing, nor will the machine have to be taken apart for internal repairs.

These blowers are made under the American patent by T. Wilbraham & Bros., 2316 Franklin Avenue, Philadelphia; and under English, French and German patents by Chas. Ashbury, Birmingham, England. From either of these makers fuller particulars may be obtained.

The Manufacture of Car Wheels.

We take the following from a paper by Mr. G. G. Lobdell, of Wilmington, Del., read at the December meeting of the Master Car Builders' Association:

We bore our wheels on a vertical boring mill of the usual form, but use four jaws on our chucks instead of three, in order to secure the wheel being chucked perfectly true. We have discovered, too, that in attempting to make too much progress in boring by forcing the cutters and taking only two cuts through the wheel, the wheels would oftentimes not be bored cylindrical, and if the axles were turned a perfect cylinder, or as nearly so as possible, it acted as a wedge tending to burst the wheel when being forced on. The converse of this is equally true.

We have, therefore, adopted as a rule to take three cuts through our wheels when boring them, and a singular number of cuts from the

axle, so as to insure a perfect fit between the wheel and axle.

We force our wheels on at a pressure of between 20 and 40 tons, and since we have adopted the precautions in fitting I have just stated, we have never been troubled with any complaints of loose wheels.

Flange Wear.—This also is an important matter for two reasons:

1. Quite often a wheel but partly worn opposite one badly worn on the flange has to be thrown in the scrap pile, simply on account of the difficulty of mating it.

2. The liability of breaking resulting from a flange worn thin.

This defect (flange wear) can probably be traced to several causes—improper gauging and mating, position of wheel in the truck, and difference in hardness of chill. Probably less flange wear is occasioned from the last-mentioned cause than others.

How much improper tramming has to do with the matter I leave to the Association of Car-Builders to determine, merely stating that some experienced railroad men attribute nine-tenths of this defect to that cause. As much as is traceable to improper gauging and mating, by

I can see no help for this until those controlling the purchase of wheels discriminate in favor of those who have a practical knowledge and experience in the working of the iron used in the production of an article which depends in as great a degree as that of any other article used on railroads on the care, experience and skill of the maker. This, in view of the large number of really responsible wheel makers, certainly would not be a difficult task.

I know of no branch of metallurgy that requires more constant attention and practical knowledge. Constant care is necessary in the molding, the mixing of the iron, the melting, the cooling or annealing, the selecting and gauging, to insure perfect success.

It may be said that the price of a perfect chilled wheel is constant vigilance—constant vigilance on the part of some one who has a greater interest than his weekly wages or salary, agency, or share of the profits—the vigilance of one whose reputation is at stake, and who has a conscientious regard for the lives of those who travel in the cars and on the engines under which the wheels are to be placed.

My practice has always been to break up all wheels about which there is the least doubt;

1-10 makes cast steel requiring more hardness.

1-50, limit for steel of maximum hardness and tenacity.

1-80, very hard cast steel, forging with great difficulty.

1-90, steel not malleable hot.

2-00, lower limit of cast iron, cannot be hammered.

2½ to 3, first approach to a granulated fracture.

4, white cast iron, carbon and chemical combination not free.

5, mottled cast iron.

6½, carbonized cast iron.

8, super carbonized cast iron (silver white).

Both cast iron and steel, when they contain the proper per cent. of fixed carbon, possess the property of being hardened when cooled suddenly, which hardening is due in either case, not as some suppose to a chemical change, but to a different arrangement of the particles composing the parts hardened.

In cast iron it is produced by molten iron being run against a smooth surface of cast or wrought iron, and is called chilling.

It is a well known fact that some steel will

fact that the ores differ in different parts of the bed or vein, and also to a change which may take place in the working of the blast furnace.

Again, there are kinds of iron that have all the chilling properties desired, but which do not possess sufficient tenacity to warrant their being used for railroad wheels. In fact, there are very few irons that have all the properties necessary to make a good wheel when used alone.

I am firmly convinced that those ores that contain the least sulphur and phosphorus make the best chilled castings requiring strength; that the ore should be smelted with charcoal, and with the blast cold or nearly so.

As to another defect, viz., blotches. This is a subject to which considerable attention is directed, and which your Association has discussed.

That this is a defect to which all chilled wheels are liable, and also that more of this defect is evident since the equipment has been made so much heavier and the speed greater, is a fact.

As far as my observation goes, this defect on the tread is confined almost exclusively to

wheels of small diameter and those that are used under heavy engines, tenders and cars running at a high rate of speed, and more particularly tender wheels than others. As to its cause, I am not prepared to say at this time. I will say, however, that I am convinced it does not arise from the use of any particular character of iron, either hematite or magnetic and specular, as I can readily prove by the samples I present for your examination. This defect is one that the manufacturer will gradually overcome, and although unsightly is not a dangerous one. All the tests that can be applied fail to discover this defect before the wheel is put in use.

Railroad wheels are subjected to harder service and have to stand severer test than formerly. This is on account of the increased speed and weight of cars and engines; consequently the smaller the wheel the more perfect should be the chill.

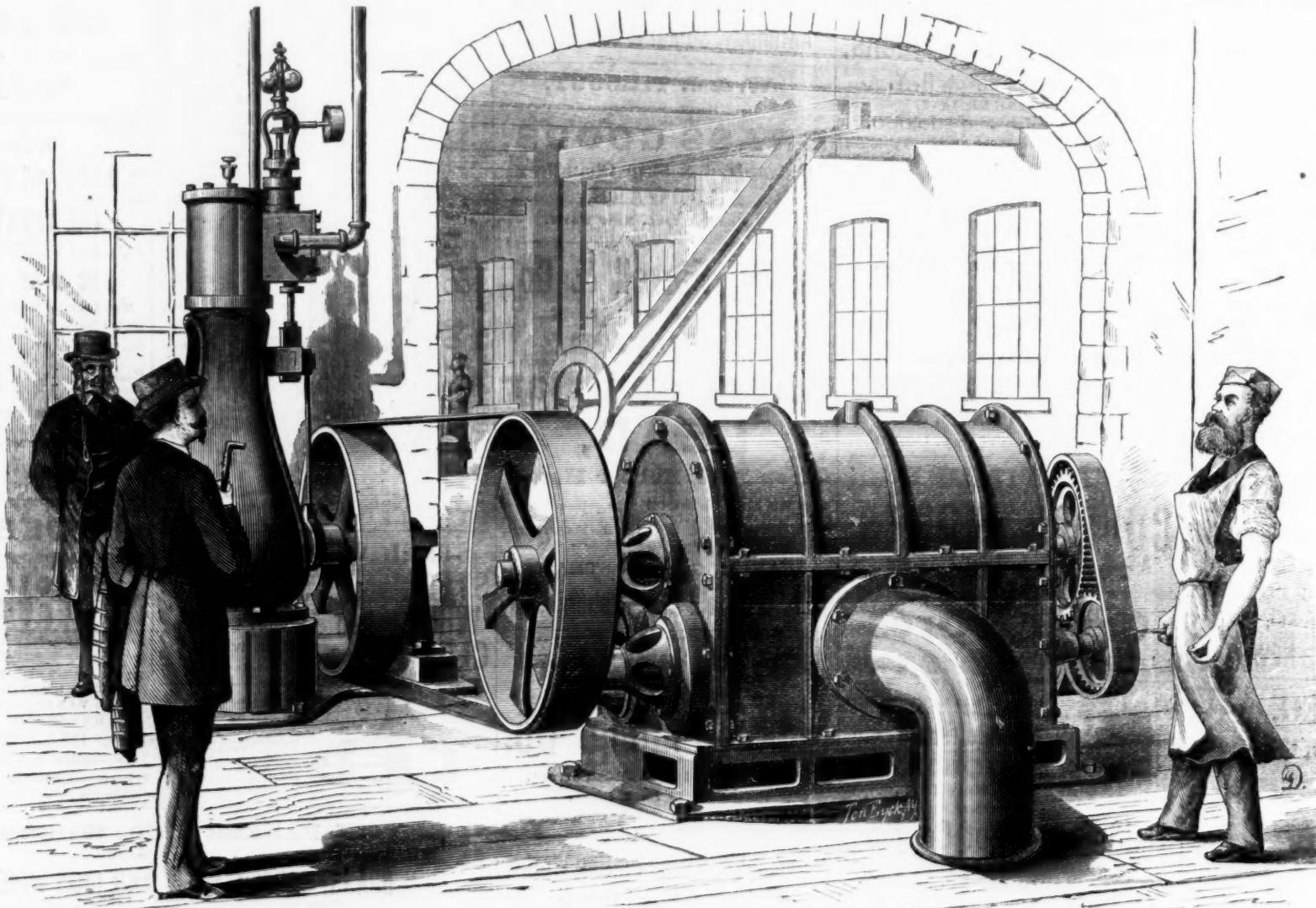
Notwithstanding the increase in the speed and weight of engines and cars, I believe there is no necessity to resort to cast steel wheels, which are open to the objection of increased expense, unequal wear, the injurious action of the track, as in holding or sliding.

After many careful and expensive experiments with every kind of iron, of different mixtures of cast with wrought iron

and steel, I am satisfied that the best and cheapest railroad wheel can be made of good charcoal iron, free from sulphur and phosphorus, and made with the blast cold or not too hot.

With care in the selection of ore, and care and skill in the manufacture of railroad wheels, they ought never to break in use, save in extreme cases where the overhanging broad tread or point of the flange breaks by reason of badly aligned frogs or track. They should be chilled uniformly and deep enough not to wear in flat places unless held by the brake. Such wheels have been made, and they can and will be made again. All the responsible wheel maker asks is a fair price for his product and relief from unjust competition.—*Railroad Gazette*.

The Scotia Iron Works, at Leesburg, on the Atlantic & Pacific Railroad, were incorporated in 1869, with a capital of \$100,000. The company own about 10,000 acres of land, a portion of which is timber land, which furnishes charcoal, and the balance ore land, the principal feature of which is two ore banks of red oxide and blue specular ores, which yield 50 per cent. in furnace. They have one charcoal furnace, the dimensions of which are: stack, 40 feet in height; 9 feet 4 inches at base. This furnace has recently completed a ten months' run, having made 8529 tons of metal, 7132 tons of it being No. 1. During the month of October it made the extraordinary run of 1034 tons.



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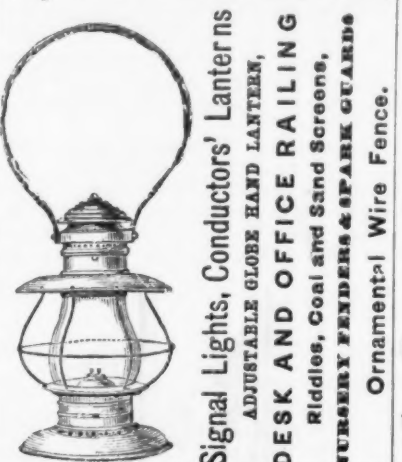
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November 17th, 1871.

December 28th, 1871.

Re-issue, October 29th, 1872.

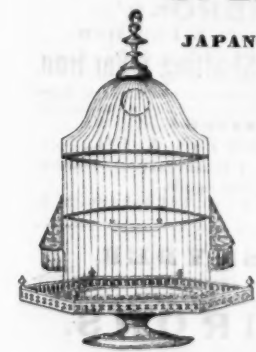
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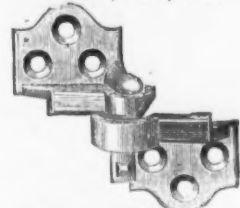
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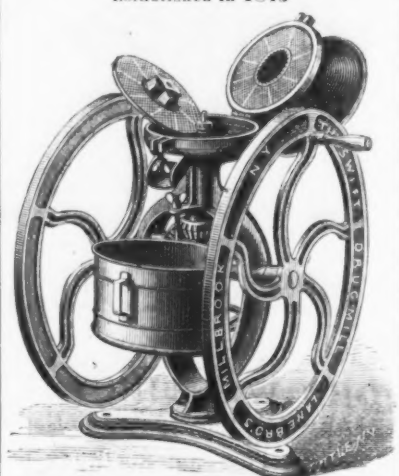


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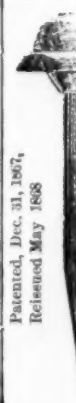
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Cabinet Brass Founding in Bir- mingham.

A correspondent of *Iron* furnishes the following account of a visit to the brass foundry of Thos. Pemberton & Sons, Birmingham, which contains much information of interest to our readers:

Our first visit was to the mixing shop, in which the casters melt or cast the metal. Brass is, as most of our readers are aware, made of copper and spelter, mixed in the casting in different proportions, according to the quality required. In strip metal of the best quality the proportion is three and a half of copper to one of spelter; a mixture of two and a half of copper to one of spelter produces very good brass, and a common article is produced by a mixture of five of the former to three of the latter. When melted, the liquid metal is poured into ingots, popularly called "sows," in other words "pigs." In casting, great care has to be paid to the melting and pouring of the metal. In Messrs. Pemberton's works the metal thus produced is all recast by ordinary casting. The object of this is that the metal shall be of one uniform color—a very important thing in cabinet brass work. If the admixture of the metal were left to the workman different tints would be produced, and the color would not be uniform.

Before we pass to the molding, we may notice here that all the filings, scraps of metal, and other refuse are carefully preserved, cleaned, and remelted into brass. In this process the iron and steel, which has been mixed with the brass in working, has to be carefully extracted. Formerly this was a very tedious process, and used to be done by hand, with magnets properly held to draw out the steel and iron. It is now done by a very ingenious machine. The refuse is put into a hopper, whence it falls into a box in which revolves a cylinder on which magnets are fixed. These draw away all the steel and iron, which pass into receptacles, and the cleansed brass dust flows out of the machine down a spout into a box below. The sweepings of the shops and yard are collected and sold to refiners, who extract the metal which they contain. The yearly value of the "waste" at such works as we are visiting forms an important item in the returns.

We now come to the most interesting part of the work—namely, casting and molding. Mr. W. C. Aitken, whose practical knowledge of all that relates to the metal trades is probably not surpassed by any living writer, gives the following admirably clear description of this work: "The appliances," he says, "are a sand trough, free, good and fine sand, cast iron wood molding frames or boxes, fitted together in two parts, molding boards, clamps to hold the boxes together when closed, furnaces, Stourbridge clay or plumbago, crucible and ovens to dry cores. The process of molding consists in filling the first half of the box with sand; when filled, the patterns, if flat, are simply laid on the surface; if circular, they are driven in to half their diameter; dry parting sand is dusted all over the surface of the first half of the box; this is in order to separate the two halves of the box more readily; the upper half of the box is then dropped on, and is held there by dowels. The sand is then filled in and beaten down, a molding board is placed on the back, the box separated (which is easily done, owing to the parting sand); the patterns lifted out, 'gets,' or connections are formed by cutting away the sand and connecting them with the apertures of the box provided for the introduction of the metal. The mold is then dusted over with 'bean' flour, dried when necessary, the two parts or halves of the box closed together, and held in that position by clamps; the metal is poured in, and a perfect copy of the original pattern or mold is produced. In fine casting the mold is dusted over with 'loam' or fine sand, thereafter with wood charcoal powder; it is then placed over the pattern again and beaten; the fine sand and charcoal powder copies sharply all the details of chasing and minute markings in the pattern. Cored casting is a more complicated operation, as it will be readily understood that when draperies with their folds and under-cuttings are introduced, on the attempted removal of the pattern or model, the portions of sand which fill these would be torn away; this must be dealt with and prevented. In order to avoid the breaking away of the sand, the mold has to form small pieces of sand into portions or cores, which he can remove; a great number of 'false cores' have to be made in these castings. These, as has already been stated, require to be so framed that they can be removed before the model is withdrawn, and require to be replaced before closing the mold or box. As the looseness of any one of these 'cores' would spoil the casting, the cores require great skill in formation and placing. Molding, from an ordinary process is, in this kind of molding, elevated into the confines of art, and is consequently an expensive operation." The molds are baked hard, being placed before a stove and left until they are dried through. In common casting of ordinary plain patterns, without any "wrought" parts in them, the metal is not so highly fused, and the molds are not baked. When screws, spikes, or hooks have to be affixed to any parts of the castings, they are placed in the molds or "side," and are thus fixed into the liquid metal, and when cooled from an integral part of the article cast.

Casting is the unhealthiest part of brass work, for in pouring the metal either into the ingots or molds, the fumes of the spelter rise and pass into the lungs of the men. To prevent this mischief to some extent, each pourer binds a handkerchief round his mouth and nostrils while engaged in emptying the pots. When the molds are opened, the castings are more or less covered with sand. This is removed by placing them in a "shaking barrel," by turning which all the particles are shaken off.

When this has been done, the work is taken into the rough warehouse, and weighed against the casters, and hence the various parts are delivered to the different workmen. They are sorted by girls, whose lightness of hand seem well adapted for this kind of work. The multiplicity of articles is perfectly astounding, for every article used in cabinet brass work is here produced, the names of which would fill a good sized book. All articles are designated by numbers, and at Messrs. Pemberton's they have reached beyond 10,000, and this number, large as it is, does not cover them all, for in most cases one number includes three, four, ten and, in some cases, twenty sizes. When sorted, the men come with their order books, and receive all the parts of the articles belonging to each order, take them to their respective shops to be dressed or finished, and then returned for lacquering and wrapping up.

An important part of brass work is "dipping." Mr. Aitken furnishes the following lucid account of this process. All the conditions required are to be found in full operation at Messrs. Pemberton's. "The shop is," he says, "or should be, a well-ventilated, high roofed apartment, with abundant provision for the escape of the fumes of the acid. It is built round interiorly with brickwork, on which to place the tubs which contain the water to kill the acid, and the 'jowls' or earthenware vessels in which the various strengths of acid are contained. There should also be a muffle in which to anneal the work, and horizontal plate of iron with provision to heat it, in order to keep the box-wood receptacle or sheet iron pan and its contents at a moderate temperature. This shop should be in connection with a space or yard in which to place the pickle troughs, and there should be ample provision for the supply of clean, cold water; if soft water, so much the better; also a set boiler in which to keep hot a supply of ley or alkaline solution, as potash of soda. The materials employed are aquafortis of various strengths, pure water, and argol, i. e., the refuse or sediment of wine casks, or crude tartar in the form of a powder. After annealing, the work is immersed in a weak solution of pickle, to 'scale it,' or remove the external skin. After rinsing it out, it is brushed with sand, to remove the more firmly adherent scales. Again pickled, if uniformly clean, it is then in a condition to receive a final finish, if bright dipped; and, if dead dipped, to be subjected to the 'deadening' process, which is conducted as follows: The aquafortis is reduced from its dipping strength by means of water, or a special variety is used and designated by the name of 'deadening aqua.' A quantity of either the former or latter is poured into a 'jowl,' or brown earthenware open-mouth vessel. The articles are placed therein, and the jowl agitated till a creamy coating is observable over their entire surface; they are then removed and washed out in water. After they are cooled and the acid 'killed' they are passed through the strong aquafortis, rinsed out in three several tubs of water, and then dried out in warm box-sawdust contained in the sheet iron pan already alluded to. Any acid which may have accidentally insinuated itself into defects in the work is neutralized by immersion in the 'ley' or alkaline solution contained in the boiler. After the articles are dried out they are then plunged into a tub containing pure water, on the surface of which is strewn a small quantity of argol, or tartar. In this condition the workmen holds them in his vice, or, if round or globular, places them on the chuck in his lathe."

Burnishing is also an interesting part of the work. The articles are put in water containing "argol," and a mixture of gall and vinegar, then placed in a pan of sawdust, and put over a stove to dry. Burnishing is done in lathes and vices, and several kinds of burnishers are used in the process. In burnishing the rings for cornice poles, the ring is not fixed on the chuck, but held on a round chuck by the left hand of the worker, while he burnishes it with the right, the fingers of the left hand being guarded by strong metal thimbles.

In the case of jointed work, such as chains, &c., which cannot be cast together, the parts are joined by soldering. The parts are placed on a flat piece of metal, which is put on a hollow revolving table filled with cinders. The parts to be joined are covered with the solder, and a jet of gas, forced down by a blow-pipe in an elastic tube, is turned upon the parts. A boy, by means of a foot treadle, blows the bellows, and the workman turns the pipe on the work, forcing the heat on the parts to be soldered. In less time than it takes to describe it, the soldering of many joints is effected. The heat can be put on and turned off in a moment.

Among the most interesting processes of the trade must be placed bronzing. The different colors produced by bronzing are steel, black, green, copper and Florentine. In steel, the article to be bronzed is covered with acid made of various chemical substances, and is brushed by a revolving scratch brush made of wire. In this case the article is not heated at all, but in green bronzing it is heated a little; a liquid is afterward applied by a brush, and it is then dried on a stove to absorb the liquid out of the pores of the metal. It is then covered with the solution again. In black and green bronzing, the article is covered with black lead, and carefully brushed with a hand brush. In the latter case the color is entirely produced by lacquer.

After the work is dressed and finished it is lacquered. This is done by covering the finished brass work with transparent varnish to preserve the surface and finish of the articles from ordinary and extraordinary atmospheric and other influences, and "may be said to complete the manipulatory operations in the manufacture of objects in brass." The lacquer is put on by brushes, and the articles are dried on stones. This light work is done by girls or young women. It makes the bright color of the brass permanent, and prevents its oxidation on exposure to the influence of the atmosphere. The metal is so sensitive that oxidation or tarnishing will be visible after a few hours' exposure. Good lacquering entirely prevents this.

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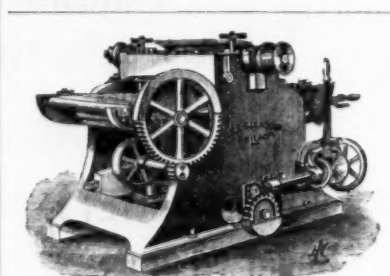
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The Bullion Product.

The total bullion product of the Pacific States and Territories for the year 1873 was \$72,358,693. This year it was \$74,401,055 showing an increase of \$2,142,362 over 1873. Jno. J. Valentine, general superintendent of Wells, Fargo & Co.'s Express, who computes the most reliable statistics on this point, writes as follows:

We hand you herewith a copy of our annual statement of precious metals produced in the States and Territories west of the Missouri River, including British Columbia, during 1874, which shows an aggregate yield of \$74,401,055, being an excess of \$2,142,362 over 1873. California, Nevada, Utah, Colorado and British Columbia increased; Oregon, Washington, Idaho, Montana, Arizona and Mexico (west coast) decreased. The increase in Nevada and Colorado is merely nominal, but in California and Utah it is \$3,100,000, three-fourths of which is to the credit of California.

State and Territory.	Gold Dust and Bullion by Express.	Gold Dust and Bullion by other Conveyances.	Silver Bullion by Express.	Ores and Base Bullion by Freight.	Total.
California	\$1,001,336	\$1,001,336	\$1,715,530	\$1,715,530	\$5,433,702
Nevada	65,368	65,368	30,000,000	30,000,000	30,065,368
Utah	141,396	141,396	11,189	11,189	153,585
Idaho	1,097,067	1,097,067	55,572	55,572	1,152,639
Montana	2,081,967	2,081,967	1,080,000	1,080,000	3,161,967
Washington	1,300,700	1,300,700	5,072,680	5,072,680	6,373,380
British Columbia	1,481,623	1,481,623	4,701,405	4,701,405	6,183,028
Mexico	1,846,725	1,846,725	788,878	788,878	2,635,603
Arizona	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
Colorado	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
Oregon	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
Wyoming	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
Nebraska	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
South Dakota	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
North Dakota	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
Minnesota	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
Wisconsin	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
Illinois	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
Indiana	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
Michigan	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
Ohio	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
Pennsylvania	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
Delaware	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
Maryland	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
Virginia	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
North Carolina	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
South Carolina	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
Georgia	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
Florida	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
Alabama	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
Mississippi	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
Louisiana	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
Arkansas	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
Missouri	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
Iowa	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
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Arkansas	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725
Missouri	1,846,725	1,846,725	1,080,000	1,080,000	2,926,725

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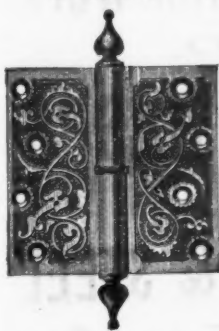
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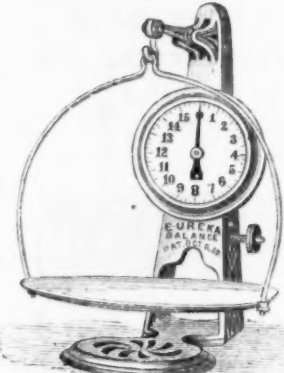
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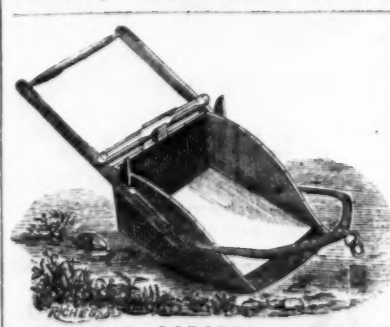
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Manufacturers of Duty's Revolving Road Scrapers, Mammoth Road Plows, and R. R. and Canal Barrows, with Cut, Wheel, &c. Send for Circular and Price List.

The Meter Iron Works.

The St. Louis Democrat says:

This company has been building two blast furnaces at a point opposite Ellwood street, Carondelet, and on the East St. Louis and Carondelet Railway. The station has been named Bessemer, in honor of Sir Henry Bessemer, the inventor of the celebrated steel process.

The works are very extensive and built in a most substantial manner and with many improvements of assured value. Among these are the Whitwell stoves for heating the blast. They are composed of a series of walls and arches of fire brick, so arranged that the gases from the furnaces in passing through them are almost entirely burned out and leave their heat in the walls to be again given off when the blast passes through the stoves in a reverse direction.

These works are nearing completion, all the heavy iron work and masonry being completed at present writing, and only the flues, pipes and inclined plane remaining to be erected, so that in four weeks of fair weather all may be in working order.

As experimental tests of the bearing capacity of the soil showed the necessity of piling, it was resorted to for the most important foundations. Those of the two furnaces, eight Whitwell stoves, and the large smoke stack, rests on white oak piles of about 12 to 14 inches diameter and 27 feet long. These piles were 30 feet long; when driven, they were cut off 3 feet from the top, and a grillage of white oak laid upon them. This was then filled with concrete and the whole leveled off with a 6 inch layer of the same material. Upon these sub-foundations the foundations in rubble stone, in hard brick and brick arches, were built.

The casting house, stock house and engine house have wide concrete bases under their rubble foundation walls, as also the boiler walls and boiler shed.

The furnaces have outer shells of red brick, bound by iron bands, in walls of Laclede fire-brick tiles, bottoms of Stourbridge (English) tiles, and one hearth and bosh, each of Stourbridge and Mount Savage tiles. Each has two sets of eight cast iron columns, one for the outer shell, the other for the inwalls. The Whitwells have casings of good plate iron, and are built up half of Stourbridge, half of Pacific (St. Louis), fire-brick and tiles. The stock house has a retaining wall on one side, to retain the filling about the furnaces on which the main smoke flue and the slag track rest. The north side and the two ends are of frame, and it has a gravel roof in one span of 95 feet. The four tracks are carried through it on trestles, so that the ore and coke can be dumped from them.

The inclined plane starts from the center of the stock house, and rises to the charging level on two cross beams, supported on columns, all of wrought iron. It carries a double track, on which two four-wheeled cars run, each carrying four buggies of ore or coke.

These are worked by wire ropes, wound on two drums by two hoist engines, having each two cylinders 12 inches by 18 inches; each engine can be used separately, each can turn both drums, or both may be used jointly. The tracks end on the middle of the bridge between the furnaces, which is 73½ feet long by 18 feet wide, resting on columns in the middle and on the gallery brackets at the ends, and built of wrought iron. A fence 4½ feet high extends around the bridge and galleries, which are 34 feet in diameter.

The casting house is of brick with a corrugated iron roof.

The boiler shed is of frame, with a gravel roof; the boilers are 42 inches by 60 feet, made of Hillman's Tennessee charcoal iron. Five batteries of two each are now built, room being left for as many more. Each battery communicates by means of an 8 inch pipe to the 20 inch main steam pipe, from which an 18 inch pipe leads to the engine house, branching there into two 15 inch pipes. The engine house is of brick, with a basement of rubble stone walls, which start with the three engine foundations from a one foot layer of concrete. These foundations are very solid, built of hard brick in cement and rapped by cut Grafton stone.

The three blast engines have each one 38 inch steam and one 80 inch blowing cylinder by 4½ feet stroke, two fly-wheels 14 feet in diameter each, of 10 tons weight. Each engine weighs about 85 tons. The roof of this building is in one span and covered with iron.

The smoke stack is of ample dimensions to suffice in case a third furnace were ever added. It rises from a 45 feet diameter concrete bed on the piling, thence 9 feet in three offsets of rubble and one of hard brick in cement, then follows a hollow octagon 18 feet in clear, 5½ feet walls, 13 feet high; then a conical shaft 25½ feet at bottom, 12 feet at top, 180 feet high, capped by a plain cast iron ring; the walls are four brick at bottom and one brick at top. The lining of fire brick is entirely separate, and 88 feet high.

The daily consumption of these works is estimated at about 160 tons ore, 120 tons coke, and 80 tons limestone, and the production at about 100 tons pig iron per day.

They will be completed during the spring of the present year.

New Fire-Proof Colors and Enamels.

Dr. Kosch, of the Chemical and Technological School at Vienna, has made an interesting discovery, which consists in the fact that certain colors may be made fire-proof, and may thus be prepared for painting on china and other substances in precisely the tones required.

The inventor has prepared a palette on which his colored enamels may be used like ordinary oil colors, and may be painted in every conceivable combination of tints without being in the slightest way altered by the action of

fire. Dr. Kosch at the same time makes use of a specially prepared enamel, which he spreads over the surface to be painted on, and by which the irregularities and porosities of the porcelain are as thoroughly concealed from view as if they were covered with thin, smooth, fine linen. The importance of such a surface medium will be fully understood by all who are practically conversant with the difficulty of preventing the irregular and undue absorption of color which has hitherto stood in the way of producing artistic and carefully-toned effects of colors on porcelain.

This valuable discovery is, however, of perhaps greater importance to the worker in iron, who may now by this means enamel his iron articles in the most artistic style; thus not only making them really beautiful and cleanly, but positively indestructible; a desideratum long sought for, but never yet attained, except in the common and plain pots and pans, dishes and plates which have so long been in the market, and which, though very useful in the kitchen, are unrepresentative at table from their want of finish and beauty.

Another and scarcely less interesting invention for which Austrian art is indebted to Dr. Kosch, is the fusion of gold, silver and platinum with bronze, by which the most gorgeous effects are produced, and which, in combination with his new enamel is supposed to indicate a new era in art manufacture.

The Cleveland (England) Iron Trade in 1874.

The productive resources of the Cleveland district have been extended during the past year to an extent that will bear a favorable comparison with any previous period of its history; and this process of development applies equally to the mineralogy as to the metallurgy of the district. Since January of 1873, not less than 17 new blast furnaces have been built in Cleveland, representing, at the very modest calculation of £20,000 per furnace, a total capital of £340,000, and an increased capacity of production to the extent of at least 800,000 tons of pig iron per annum. The total number of furnaces now built in Cleveland is 154, as compared with 139 at this time last year. No less than 125 furnaces are now in blast, leaving 29 furnaces inoperative. During the past 12 months the Lackenby Iron Company have blown in a furnace near Redcar; Bolckow, Vaughan & Company have blown in a furnace at Eston; Mr. Thomas Vaughan has blown in two new furnaces at South Bank; Messrs. Bell Brothers have blown in two new furnaces at Port Clarence; Messrs. W. Whitwell & Company have blown in two new furnaces at Thornaby; Robson, Maynard & Company have blown in two new furnaces at the Redcar Iron Works, Coatham; and the Loftus Iron Company have blown in one new furnace at Skinningrove. Within the same period Messrs. Robson, Maynard & Company have undertaken the erection of two new furnaces; Messrs. Swan, Coates & Company have begun one new furnace at Cargo Fleet; Messrs. Hopkins, Gilkes & Company have commenced to build two new furnaces at Middlesbrough; Messrs. C. & T. Bagnall have commenced one furnace at Grosmont; Messrs. Bolckow, Vaughan & Company have commenced the erection of one new furnace at Wotton Park; and Messrs. Bell Brothers have commenced to build two new furnaces at Port Clarence. In addition to these the Rosedale and Ferryhill Iron Company have two furnaces almost completed, so that if trade remains ordinarily prosperous, there is every likelihood of a dozen more new furnaces being brought into operation in the course of the ensuing year, which would have the effect of bringing up the number of furnaces available for use in the Cleveland district to the grand total of 166.

Cleveland will then be able to claim not only the distinction of being the largest iron producing district in the world—a distinction in which she has been unrivalled for at least half a dozen years past—but she may also lay claim to having a larger number of furnaces available for use than either Scotland or Staffordshire. Everything, indeed, points to the probability of Cleveland taking the lead of the iron making districts of Great Britain to a much larger extent than she has yet done, and this notwithstanding the rivalry threatened by younger districts, such as Lincolnshire and Northampton. Upon one or two specially interesting features of Cleveland's progress during the past year remark may be allowed. The iron trade has found a new center in the very heart of the Cleveland mining district, about eighteen miles from Middlesbrough and ten miles from the next nearest blast furnaces.

At Skinningrove, on the sea shore, between Redcar and Whitby, the Loftus Iron Company have constructed and put in blast two furnaces of the most modern kind. These furnaces are built on the company's royalty, and within a mile of the spot where the ironstone is worked, so that there is no charge for the freight of this commodity. Not a few have questioned the wisdom of building furnaces in such an out of the way locality; but there is a strong probability that the example of the Loftus Iron Company will be followed by others, and that within the next few years a second Middlesbrough will arise in the midst of what is now an obscure and isolated mining district, which, until yesterday, was even inaccessible to railway communication. There is good reason for believing that pig iron can be made here at a cheaper rate than in Middlesbrough, for the latter place is situated almost midway between the South Durham coal on the one hand, and the Cleveland ironstone on the other, and pig iron makers have to pay freight for both, while at Skinningrove the Loftus Iron Company pay only for the freight of fuel. It is quite true that they will require to pay something more for coke delivered at Skinningrove than they would at Middlesbrough; but then they have their ore free of freight, and the value of this consideration may be estimated by the fact that while it requires about 3½ tons of ironstone to produce a ton of pig, it only needs 30 to 35 cwt. of coke. At Middlesbrough, also, of late years pig iron makers have found themselves much hampered for lack of a suitable spot for deposit of slag, of which there is a residuum of two tons or thereabouts for every ton of pig iron produced, while at Skinningrove, and all along the coast from Saltburn, there is a splendid slag tip right over the cliffs and into the sea. To possess such a "tip" as this would save many hundreds a year to some of the Middlesbrough iron masters, who are now so "cabineted, cribbed, confined," that they have to pay for the cost of removing their slag to the sea—a distance of six or eight miles. It only requires better shipping facilities, and these, from the peculiar configuration of the coast line at Skinningrove, could easily be provided at little cost—to make this new center of the Cleveland iron trade a formidable rival to the metropolis of Cleveland, and the recent extension of railway facilities in the immediate neighborhood will do much to bring about such a result.—The Engineer.

Reasons for Using our Goods.

Hogs when ringed are prevented from rooting, and fatten quickly.

Pastures and clover fields are kept smooth and are not destroyed by the hogs rooting them up.

Feed lots in the winter are kept smooth, and corn that is otherwise rooted and tramped into the ground is saved.

The **Triangular Wire Ring**, manufactured only by us, is the only wire ring that can be inserted in the hog's nose with one grip on the **Ringers**, and is the only ring that will remain in a hog's nose, as it fits close, will not turn in for the joint to irritate the nose, is not liable to be torn out, and hals quickly.

No puncturing of the nose required to insert our ring.



For Sale by the Leading Jobbing Hardware Houses of New York, Philadelphia, Baltimore, Cleveland, Columbus, Cincinnati, Dayton, Indianapolis, Lafayette, Chicago, Milwaukee, Burlington, Davenport, St. Louis and San Francisco.

SOMETHING NEW.

We shall this present season make a **Heavy Tinned Wire Ring** that will not rust in the hog's nose. The strongest and best ring in the market.

Prices.

Ringers, retail	\$1 00
" per doz.	6 00
Rings per box (100) coppered wire	50
" per doz boxes (1200)	3 00
" per box (100) tinned wire	60
" per doz boxes (1200) tinned wire	4 00
Tongs or Holders retail	1 25
" per doz.	9 00

The coppered wire ring will be **rent** unless otherwise ordered.

Samples by mail postpaid on receipt of retail price.

Goods sent C. O. D. with privilege of examination before paying charges.

Net prices in quantities, circulars and posters mailed free.

Our advertisements are now inserted in over 1800 newspapers, published in every State of the Union, so that dealers will find large demand created for our goods.

THE NICHOLSON FILE.

All *Nicholson Files* are cut with the **Patent Increment Cut**, an invention owned and controlled exclusively by us, the file cut in this manner being Patented as a new article of manufacture, and differs from all other machine cut files (all of which have their teeth cut with equal spaces) by being cut with teeth slightly *expanding or increasing in size and space from the point*, thus avoiding the too great regularity of teeth common to all other machine cut files. The tendency of all cutting tools with teeth or cutters placed at regular distances from each other may be illustrated (to the machinist at east) by the fluted reamer—as it is well known that if a round reamer be made with (say 12) teeth whose spaces are equidistant, the hole reamed will *not* be round and smooth, but will approximate to a hexagon in shape. Whereas, if the same number of teeth be made of irregular distances, the hole reamed will be both round and smooth. The same is true of a file, hence the necessity of its having teeth at unequal distances, and to which we have applied the name of **Increment Cut File**, which possesses all the advantages of hand cut work, and the accuracy and uniformity of machine work. It is now upwards of seven years since this File was introduced to the public, and the demand has increased until our production is undoubtedly treble that of any File manufactory in the country.

We put all files under seven inches in boxes of either one-half or one dozen each. These boxes are neatly arranged, and open on the end, on which the kind is plainly marked with printed labels, acknowledged improvements on the old methods.

The "**Increment File**" is not an experiment, but an established fact, and already has acquired a legitimate demand or upwards of 500 dozen per day. We employ no *regular Travelers*, but our goods may now be found in the hands of the principal jobbers and dealers throughout the country.

Prices and terms will be forwarded on application to

NICHOLSON FILE COMPANY,
Providence, R. I.

USE THE BEST.



Pawtucket, R. I.

The American File Company have the exclusive right to use the **Bernot process** for cutting files. By this method all the advantages of hand cutting are secured, together with an accuracy unattainable in hand work. They are the only manufacturers who employ machinery for testing files and steel.

Goods of all known manufacturers have been repeatedly tested, and interesting tables have been compiled showing the working qualities of files made by different makers, and of files made from different steels, and with various shapes and angles of tooth. They have thus reduced the manufacture of files to an exactness and perfection with a uniformity of result, as they believe, never before attained. No file, foreign or domestic, that they have ever tested, has equalled the performances of their own goods taken at random from their stock. Their machines are capable of the most delicate adjustment, and can produce the very finest work known to the trade. Special files made to order. Prominent file manufacturers are having their best goods from our works.

Price lists and information furnished on application.

AMERICAN FILE CO., Pawtucket, R. I.

FILES
AND
RASPS.
XTRA QUALITY,
MADE FROM THE BEST
IMPORTED STEEL
BY THE
Auburn File Works,
AUBURN, N. Y.

JOHN ROTHERY'S
Celebrated Hand-Cut FILES,
Made of Best English Cast Steel.

WALSH, COULTER & FLAGLER, Sole Agents,
83 Chambers and 65 Reade Streets, N. Y.

W. F. SHATTUCK & CO.,

113 Chambers and 95 Reade Street, New York.

MANUFACTURERS OF AMERICAN HARDWARE.

Cross & Tull's Pat. Wrenches. Mouse Traps. Wire Sieves. Van's Cow Bells. Axes, Picks and Hatchets. Hammers. Crow Bars. Sled Irons. Boring Machines. Cast Iron Hatchets. Coffee Mills. Star Steel Spoons. Stocks and Dies. 4x8, Pick, Sledge & Hammer. Scale Beams. Patent Tap Borers. Tool Chests. Clinch Horse Collars. Brandage Horse Nails. Maguire's Wrt Iron Goods. Shattuck's Platform Counter Scales. Handles. Hatchet, Auger, Chisel & File. Allen's Pat. Boot Jacks. Gimlets and Gimlet Bits. Augers and Auger Bits. Jacob Nut Drivers.

DEAN'S New Patent (1873) Screening Scoop SHOVEL

For Coal, Coke and Coal Ashes, and other Substances.

The largest frames are 12 by 16 inches, with seven bars, and are made of the best Malleable Iron. They are, or can be, wired between bars by an arrangement of holes a quarter of an inch apart, by an ordinary person, to screen any size substance desired. They are warranted to be the most durable and practical Screening Shovel made, or money refunded. Reference—All New York Gas Companies and Hotels.

Smaller sizes on hand. Please address orders to

A. SEE & SON,
N. Y. Shovel Works,
1358 Broadway, N. Y.

Price: Largest size \$30 per doz. and upwards, according to size of spaces.

Clement & Hawkes Mfg. Co.,

Manufacturers of

SHOVELS,

Planters' Hoes, Trowels and Machinery.

Northampton, Mass.

Send for Circular and Price List.

Schweitzer Mfg. Co.,
57 Reade St., N. Y.
IMPORTERS & JOBBERS.

Established 1816.
Peter A. Frasse & Co.,

95 Fulton Street, New York,

SOLE AGENTS FOR

Thomas Turner & Co.'s Suffolk Works,
SHEFFIELD.

FILES AND HORSE RASPS,

And Importers of

STUBS' FILES, TOOLS & STEEL,
W. J. Davies' Sons' London Emery Cloth,
HUBERT'S FRENCH EMERY PAPER.

EVERY FILE WARRANTED.

Equal to the

BEST.

Western Files.
Works, Beaver Falls, Pa.
Western Files.
Office, 96 Chambers St., N. Y.
Western Files.
LARGEST CAPACITY
Of any File Works in the World.
In the face of strong prejudice against American files, this brand has earned a reputation second to none. The trade in all sections testify to their excellence. We confidently offer these files as superior in every respect and cheaper than any first-class file in the market. A trial will confirm their reputation.

PENNSYLVANIA FILE WORKS.

Illustrated Catalogue and Price List
McCAFFREY & BROTHER,
Manufacturers of **FIRST QUALITY FILES and RASPS ONLY,**
Nos. 1732, 1734 & 1736 North Fourth St., Philadelphia, Pa.



ERIE

Lawn Mower

For 1875.

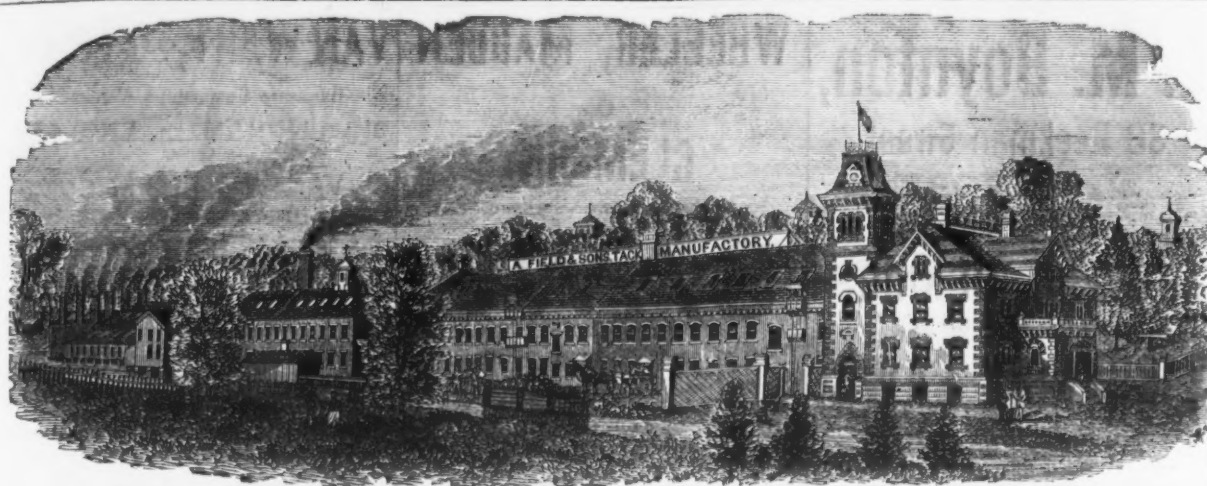
PERFECTED WITH

ADJUSTABLE CUT.

Manufactured by

H. M. REED & CO.
Erie, Pa.

Send for Circulars and Price List.



A. FIELD & SONS,

TAUNTON, MASS., Manufacturers of

Copper and Iron Tacks, Tinned Tacks,

SUPERIOR SWEDES IRON TACKS, for Upholsterers' Use, Saddlers' Supply, Card Clothing, etc., etc.

American and Swedes Iron Shoe Nails,

Zinc and steel Shoe Nails, Carpet, Brush and Gimp Tacks, Common and Patent Brads, Finishing Nails, Annealed Trunk and Clout Nails, Hob and Hungarian Nails,

Copper and Iron Boat Nails, Patent Copper Plated Tacks and Nails, Fine Two Penny and Three Penny Nails, Channel, Cigar Box and Chair Nails, Leathered Carpet Tacks, Glaziers' Points, etc., etc.

OFFICES AND FACTORIES AT TAUNTON, MASS.

WAREHOUSE AT 35 CHAMBERS STREET, NEW YORK, where may be found a full assortment of Tacks, Brads, &c. for the accommodation of the New York Wholesale and Jobbing Trade.

Any variations from the regular size or shape of the above named goods made from samples, to order.

Hopkins & Dickinson Manufacturing Co.,

FINE METAL WORKERS,

69 Duane Street, N. Y.

Works, Darlington, N. J.

Hand Made Locks and Real Bronze Hardware.

NEW AND ARTISTIC DESIGNS FOR

Private Residences, Banks, Churches and Public Buildings.

THE CANADIAN BANK OF COMMERCE.

Capital - - \$6,000,000, Gold.
Surplus - - \$1,800,000, Gold.

The New York Agency, 50 Wall St.,

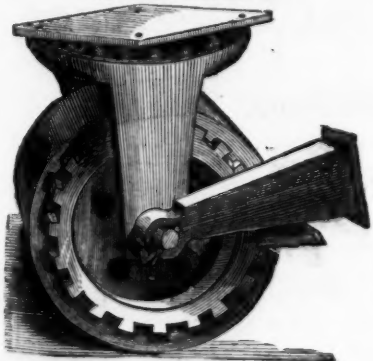
Buys and sells Sterling Exchange, makes Cable Transfers, grants Commercial Credits, and transacts other Banking Business.

J. C. HARPER, Agents.
J. H. GOADBY.

Gold Medal - Md. Int. Exposition, Oct. 1874.

Endless-Lever House & Weight Mover.

Patented January 14, 1873.



Send for Circular and Price List.

THE REAMY TRUCK CO. of Baltimore, Md.
Incorporated, Oct., 1874. Reliable State Agents Wanted.

OTIS PASSENGER AND FREIGHT ELEVATORS

For HOTELS, OFFICE BUILDINGS, STORES, WAREHOUSES, FACTORIES, MINES, BLAST FURNACES, &c.

OTIS BROTHERS & CO.

SOLE MANUFACTURERS,
348 Broadway, New York.

CROCKER BROTHERS,

32 Cliff Street, N. Y.

METALS.

Anthracite Pig Irons,
COLD AND WARM BLAST CHARCOAL IRONS,

American and English Bessemer Irons, Iron Ores.

COPPER, TIN, &c.

Advances made on Merchandise.

THE CELEBRATED

YALE LOCKS

FOR ALL USES.

ORNAMENTAL

Real Bronze Hardware,
YALE LOCK MFG. CO.,
Stamford, Conn.

Salesroom, No. 298 Broadway, NEW YORK.

BUSINESS ITEMS.

PENNSYLVANIA.

The Lehigh Valley Brass Works, Bethlehem, manufacture globe valves, steam cocks, steam whistles, oil cups, gauge cocks, etc. The main building is 80x55 feet, two stories. In the rear is the foundry building, containing three furnaces and the necessary appliances for casting the brass work. The capacity of the works is two tons per month of brass and copper work, valued at \$6000 to \$7000.

The Millerstown Iron Co.'s furnace is now working satisfactorily, though it is not making the same amount of iron as previous to their recent accident.

The Harrisburg Patriot says that the puddlers in the rolling mills there are now receiving from \$4.10 to \$4.50 per ton, a reduction of 90 cents in their wages having taken place recently. Since the panic the price for making a ton of puddled iron has fallen from \$7 to the above figures. The highest ever paid was \$8.10.

The Reading Company, at their new rolling mill in Reading, have about 7000 tons of new rails on hand.

NEW JERSEY.

The establishment of John A. Roebbling's Son's, at Trenton, the largest wire rope manufactory in the world, was established in 1847 by the late John A. Roebbling. The buildings consist of main mill, rolling mill, galvanizing shop, carpenter shop, pump house, office building and stable—all of immense size. The machinery is driven by engines whose combined capacity is 600 horse-power, the largest being 250 horse-power, and having a fly-wheel 24 feet in diameter. Their specialty is wire rope, although they manufacture merchant wire for the trade, telegraph wire, fence wire and wire rods. The rolling mill has a capacity of 9000 tons per annum. Skilled workmen are employed to the number of 350, and the business done is over \$1,000,000 per annum.

An iron firm at Trenton are preparing the materials for an iron bank building which is to be erected at Port au Prince, Hayti.

The works of the Phillipsburg Mfg. Co., at Phillipsburg, are running on full time, and employ about 250 men. Beside bridges, the company manufacture bolts, nuts and special forgings.

CONNECTICUT.

The Hill's Archimedean Lawn Mower Company, at Colt's Armory, Hartford, is out with a new patent. The new lawn mower, called the Charter Oak, is an improvement on its predecessor, the Archimedean, especially for mowing the corners of lawns.

Messrs. Hotchkiss' Sons, manufacturers of curry combs, traps and bow pins, at Bridgeport, are just fitting up their office in fine style in the new factory they have erected on the outskirts of that thriving city.

The Bridgeport Electro Casting Company has made arrangements with Mr. Frederick A. Taft, manufacturers' agent at Bridgeport, to represent them near the depot. The company turns out a handsome, solid and cheap style of door knobs, etc., made of real bronze, silver and nickel plated, having been founded two years ago, the well known Mr. Barnum being a shareholder in the concern, which promises to become a most prosperous one.

There is to be a new joint stock company at Plainville, known as the Kennedy Manufacturing Company, which is to engage in the manufacture of iron bolts. Mr. H. D. Miller is to be the superintendent.

MAINE.

A company has been recently organized at Rockland under the name of the Knowlton Platform and Car Coupling Company, for the purpose of manufacturing platform and car couplings, and selling licenses to use the same, under letters patent issued to C. H. Knowlton, dated November 26, 1872, and April 1, 1873. Its capital stock is \$50,000, in shares of \$100 each, and is all paid in.

The Portland Rolling Mills manufactured 14,650 tons of rails the past year, which, at \$60 a ton, would amount to \$879,000.

The iron foundry, at Farmington Falls, is in full operation.

NEW HAMPSHIRE.

The largest trip hammer in the United States is at Nashua. Cost \$75,000. Weight of iron in the machine, 200 tons; weight of ram, 12 tons; striking force, 100 tons; the engine which works it is 600 horse-power.

MASSACHUSETTS.

The brass foundry of C. J. Donovan & Co., Boston, was totally destroyed by fire recently. There were two buildings, one used for casting, and the other for finishing, both valued at \$2000. Some \$10,000 worth of stock was also destroyed.

DELAWARE.

The Wilmington Plate Iron Rolling Mills, at Wilmington, are running but three days each week, and confining the work exclusively to orders. The works are owned by Messrs. Seidel & Hasting, who manufacture plate iron of all descriptions, from $\frac{1}{8}$ to $1\frac{1}{2}$ in. in thickness, for boilers, iron ships, iron bridges, oil and water tanks, and all the various purposes for which iron plates are used. The works were established in 1845, and were greatly enlarged and improved a few years later. The new mill was erected in 1860. The capacity of the works, at present operated, is 3000 tons of plate iron, and about 2000 tons of blooms annually, working in day time alone. The mills give employment to about 110 hands. There are two large engines for driving the roll trains, and three smaller ones for driving the shears, of which there are nine pairs capable of shearing plates from $\frac{1}{8}$ to $1\frac{1}{2}$ in., cold. Another engine drives the forge. The steam which moves the engines is generated in four large boilers. There are also two steam hammers for making fire box iron, and one trip hammer for hammering the blooms.

A plate and boiler iron mill has recently been

erected by the Christiana Iron Company, at Wilmington. Owing to scarcity of orders it has not as yet been put in operation.

OHIO.

The Furnace and Rolling Mill of Wm. Richards & Sons, Warren, suspended operations on the 9th, the immediate occasion of which was a strike of the puddlers, who were not willing that the firm should ship the muck bar to Pittsburgh. The liabilities of the concern aggregate \$250,000, \$75,000 of which is in the shape of a mortgage upon the furnace property. The rolling mill is mortgaged for \$15,000. The remainder of the liabilities are unsecured. The assets consists of one rolling mill, one blast furnace, and about 2000 tons of ore. It is hoped that satisfactory arrangements will be made for the speedy resumption of the works.

Application has been made to the secretary, for a certificate of incorporation of the Falcon Iron and Nail Co., Niles. The capital stock is \$13,000, full paid. The incorporators and stockholders are Wm. Ward, T. K. Hall, F. O. Arms, Evan Morris, K. S. Walker, O. Shindle and Ambrose M. Robbins. The latter gentlemen will be the business manager of the company.

At the annual meeting of the American Tin Plate Company, of Millville, the following persons were elected officers and directors: Alex. Smith, president; Francis Elkin, vice president; J. G. Bright, secretary and treasurer. Directors—Alex. Smith, C. E. Marchand, Francis Elkin, John Felter, Wm. Armstrong and D. Morgan.

Negotiations are being made for the erection of a forge for the manufacture of muck iron at Monitor Furnace.—*Trenton Democrat*.

Among the dividends declared this year by our manufacturing establishments are the following: Tiffin Agricultural Works, 10 per cent. dividend and 5 per cent. reserve; Ohio Stove Company, 10 per cent. dividend; Tiffin Shoe Factory, 6 per cent. dividend for 6 months. We believe no town in the State can make a better showing than the above. It is especially good considering the depression of business during the past year.—*Tiffin Tribune*.

Both the rolling mills at Portsmouth are at work.

B. F. Remick & Co., proprietors of the Aldine printing press works, at Canton, have a building 300x60 feet, with an addition on the east of 25 feet, two stories high, of brick, with two side buildings, 40 feet square each. The business was established in 1873, for the manufacture of the Aldine presses, by which three colors are printed at once. They also make presses for printing one color, but the Aldine is their specialty. The shops employ from 90 to 100 men. Parties in England have offered the firm \$40,000 for the privilege of manufacturing the Aldine presses there, but the offer has been declined, the company being unwilling to give the right for less than \$50,000.

The Belfont Iron Works Co., it is stated, has recently purchased about 200 tons of charcoal mill at \$22 per ton, for the purpose of making a mixture. The present stock of iron will run the mill for three weeks, at the end of which time the company will either purchase more iron, start the furnace or stop making nails.—*Trenton Democrat*.

The Massillon Rolling Mill has been leased by Messrs. Taylor, Pond & Mitchell for a term of five years from the 1st inst., at \$4000 per year. It will be put in operation at once. Extensive additions will be made to the machinery and a large force put to work.

One of the Valley Rolling Mill puddling furnaces, at Youngstown, one day recently, produced at one heat 2305 pounds of castings.

Bids for an iron bridge across the Ohio, at Cincinnati, were advertised for by the Cincinnati Southern Railway Company. The lowest bid was \$593,000, made by the Watson Bridge Company, of Paterson, New Jersey. The bridge is to consist of five spans, including a channel of 519 feet, which is the largest single span in the world, except one in Germany. The total length of the bridge is to be 1597 feet.

At the Ashtabula Rolling Mill the manufactures consist of sheet and plate iron, wrought boat and ship spikes, shingle bands and washers. The building is 100x125 feet, 30 foot posts, with iron roof. It contains two engines, one of which has a cylinder of 30 inch bore and 5 foot stroke, driving a 35 ton balance wheel; a 20 inch muck mill and a 21 inch sheet mill; and makes from $1\frac{1}{2}$ inch plate to No. 32 wire gauge. There are also two spike machines and one shingle band machine.

MISSOURI.

The St. Louis Car Wheel Company have lately purchased the royalty of Sax & Kear's patent steel tire, to be used on car wheels, and have made a practical test of welding the tire onto the iron flange of the wheel. The operation was performed in the presence of several railroad mechanics and others interested, and was an entire success. The wheel, when covered with this steel tire, will endure about 25,000 miles of travel, or about three times as much as the ordinary chilled iron wheel. This firm is the only one west of the Alleghenies who have the right to manufacture these tires.

At the Vulcan Rail Mill, St. Louis, the 23d of December, the day gang finished ninety-eight rails in ninety-seven minutes, a trifle over a rail per minute, and the night gang, not to be behind, turned out forty-eight finished rails in forty-seven and one-half minutes.

ILLINOIS.


The North Chicago Rolling Mills, after closing their works for two weeks, for the purpose of making repairs, have resumed operations, and are now running full time.

Kimball Bros. & Co., of Chicago, recently sold to the Cairo and St. Louis Railroad, which was completed on the 20th ult., over 2000 tons of 46 pound iron rails and fastenings.

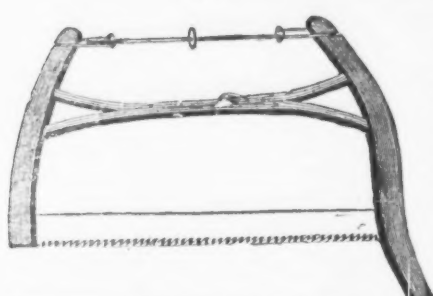
KANSAS.

Messrs. Farnsworth & Eaves are about to begin the erection of iron bridge works at Leavenworth, that city having agreed to give them a certain amount of work yearly for several years.

The Fort Scott Foundry is manufacturing stoves.

GEORGE GUEUTAL & SON,
39 West 4th St., New York.
IMPORTER OF
 **Wood Screws, Steel in Sheets,**
BAND SAWS, TOOLS FOR BRAZING, &c.
Bed Screws, Pin Hinges, and Wire Nails a Specialty.

H. W. PEACE,
MANUFACTURER OF
Saws of all kinds.
FACTORY, WILLIAMSBURGH, N. Y.



Elliptic Forked Saw Frame.
Patented June 28th, 1870.

The annexed engraving represents my ELLIPTIC FORKED SAW FRAME, which commends itself to the trade for its simplicity of construction. The Forked Frame being all in one piece, without any center bolt, secures for the Frame great strength and durability. These Frames are put up with my best Webs, marked "No. 40, Harvey W. Peace."

HARVEY W. PEACE,
Sole Proprietor & Manufacturer,
VULCAN SAW WORKS,
WILLIAMSBURGH, N. Y.

**THE SILVER STEEL
DIAMOND CROSS-CUT SAW.**

\$1.50 Per Foot.



Patent Secured

THIS new Saw, which is destined to take the place of all Cross-cut Saws in point of **SPEED AND EASE**, is manufactured by **E. C. ATKINS & CO., Indianapolis, Ind.**, who are the **SOLE MANUFACTURERS FOR THE UNITED STATES.** So confident are we that this is the best Cross-cut Saw in the market that we **CHALLENGE THE WORLD.** Orders promptly filled.
E. C. ATKINS & CO.
Saw Manufacturers and Repairers, Indianapolis, Ind.

Lloyd, Supplee & Walton,
HARDWARE FACTORS.

MANUFACTURERS OF:

**Bonnev's Hollow
AUGERS.**

**Stearn's Hollow Augers
and Saw Vises**

Bonnev's Spoke Trimmers

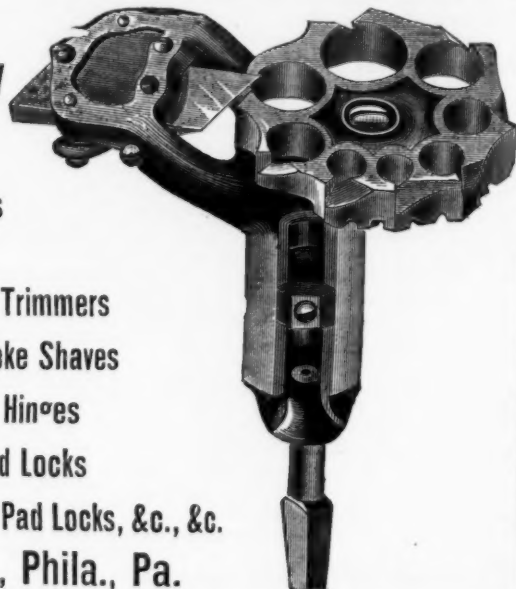
Double Edge Spoke Shaves

Adjustable Gate Hinges

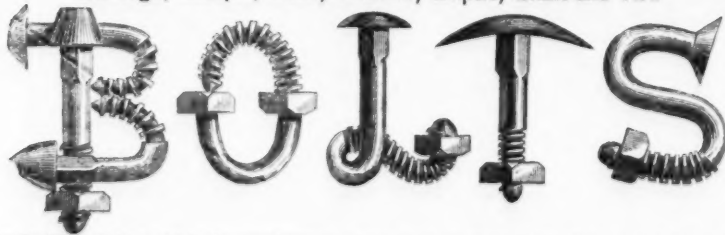
Scandinavian Pad Locks

Flat Key Brass and Iron Pad Locks, &c., &c.

625 Market St., Phila., Pa.



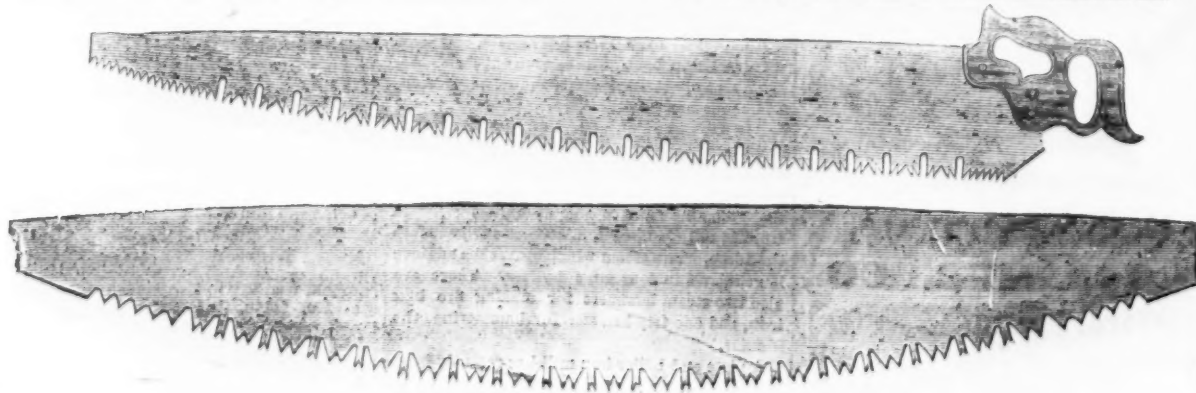
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COLUMBUS, OHIO,
Manufacturers of **BEST NORWAY IRON**
Carriage, Steeple, Cone, Shackle, Elliptic, Shaft and Tire



All the different styles used by the manufacturers of the finest Carriages. Every Bolt warranted true to size and fit. Illustrated Price List mailed on application. Our facilities are unsurpassed for the manufacture of Machine Bolts and Coach screws. Correspondence from Car, Bridge and Machinery Builders solicited.

J. FLINT & CO.,

Manufacturers of all kinds of **SAWS** and **PLASTERING TROWELS**, Rochester, N. Y.
A large stock of **Cross Cut Saws** constantly on hand. Orders filled promptly. **Dietrich's Double Handle One Man Cross Cut Saw** made with any kind of tooth desired. Our patent method of grinding Band Saws makes them superior to any in the market. Send for illustrated Price List.



E. M. Boynton,
80 Beekman Street,
NEW YORK,
Manufacturer of

Saws of all kinds.
Also Sole Manufacturer of
LIGHTNING SAWS.

Two Direct Cutting Edges, instead of one Scraping point.



Note extra steel and durability over the old V, outlined on M tooth.

Telegram Dated Oct. 1st, 1874.
STATE FAIR, EASTON, PA.

To HENRY DISTON & SONS: Philadelphia, Pa.
I want you to publicly test that challenge on Cross Cut Saws. Name time and place within thirty days. American Institute preferred. E. M. BOYNTON.

E. M. Boynton gave on Wednesday of last week an exhibition of what his Lightning Saw could do at the Pennsylvania State Fair, in which two men sawed through a sound oak log, 16 inches in diameter, in 17 seconds. Mr. Boynton informs us that his export trade is increasing, he having lately made large shipments of his saws to Australia and other distant markets.—*The Iron Age*, Oct. 8, 1874.
For fuller report of this exhibition see the *Easton Morning Dispatch* of Oct. 1st, 1874.
Henry Diston & Sons cannot furnish Lightning Saws. Why do they imitate mine?



Putnam's Government Standard
**FORGED
HORSE SHOE NAILS.**

Manufactured from the best of **NORWAY IRON**, and warranted to give entire satisfaction.

S. S. PUTNAM & CO.,
NEPONSET, MASS.

**Rogers' Self-Sharpening
HOE.**

The best Hoe in market. It will not batter or break. Wears itself sharp. Will last twice as long as any other Hoe, and is warranted to cut the "Bolles Hoe" or any Hoe in market.

For Sale at Manufacturers' Prices by
RUSSELL & ERWIN MFG. CO., - - New York.
BYRNE & FITZGERALD, - - Albany, N. Y.
KENNED SPAULDING & CO., - - Syracuse, N. Y.



**Jewett's Patent
Filter**
WITH
**PORCELAIN
LINED
COOLER.**

Acknowledged the only Complete Filter and Cooler in the world.
Hardware, House-furnishing and Crockery dealers can find no more salable article, as this Filter is perfect in its work of purifying water of every kind, attractive in appearance, &c., &c. Send for illustrated circular. Manufactured only by
JOHN C. JEWETT & SONS, Buffalo, N. Y.
Branch Office & Warehouses, 35 Murray St., N. Y.

**WHEELER, MADDEN
&
CLEMSON,**
Manufacturers of Warranted Cast Steel

SAWS

of every description,
including

Circular, Shingle, Cross Cut,
Mill, Hand, Roberts' and
other Wood Saws,
&c., &c

Cast Steel Files

of the well known brand of

Wheeler, Madden & Clemson.

FACTORIES:

Middletown, Orange Co., N. Y.

BRANCH OFFICE:

97 Chambers Street, New York.

BRUNDAGE FORGED HORSE NAILS,

Manufactured from

BEST NORWAY IRON,

by **BRUNDAGE & CO.** Sold by

WHEELER, MADDEN & CLEMSON

Middletown, Orange Co., N. Y.



I make a specialty of the **LARGEST SIZES** of Circular Saws, and call particular attention of lumber manufacturers to the following points of excellence: **Evenness of Temper.**—The peculiar structure of my furnace subjects all parts of the saw to a **DEAD** heat, and when dipped in the oil bath secures perfect uniformity.
Perfect Accuracy in Thickness.—My saws are ground on a patent machine, automatic in its operation, grinding off the thick places upon the plate before the thinner parts are reached, and when the saw is removed **BALANCES PERFECTLY**, which is proof positive of the right accomplishment of the work.
Properly Hammered.—Great care is taken that no saw shall leave my works without due attention in this important particular. A saw too tightly strained upon the rim, or too loose in the center, cannot be successfully run—hence the importance of so hammering the saw as to effect equal strain in all its parts, and at the same time **RUN TRUE**. This department is under the personal supervision of myself, who has devoted over twenty years to the art of saw making.

I am sole proprietor and manufacturer of the celebrated "**Challenge**" Cross-Cut Saw. Price List of all kinds of saws sent on application.

JAMES OHLEN.

V. G. HUNDLEY,
105 Reade St., N. Y.
NORTH CAROLINA HANDLE CO.,
(Wilson & Shober, Props.)
Manufacturers of
**AXE, PICK, GERMAN & AMERICAN
SLEDGE, and other Handles.**
Full assortment always on hand.

Backus's Patent Bit Brace

AND
**Angular Extension
BORER.**

Q. S. Backus,

SOLE MANUFACTURER OF

ANGULAR EXTENSION BORER.

Salesroom, 82 Chambers St., N. Y.

This tool can be used in any brace, at any angle, and also for straight work. Is the best and most convenient tool of its kind ever offered to the public. Eight thousand sold the first year.

Also Manufactures the Straight Extension

Backus's Pat. Improved Bit Brace.



The socket is arranged so that the strain does not come on the jaws, but on the square hole which fits the shank of the bit. The jaws attached to the sleeve hold the bit firmly in the square, and center it truly. The sweep is of wrought iron. The general finish of the stock is good. Its appearance is neat. Mechanics who have used it trade as the strongest, most simple, and quickest operating brace in the market. We manufacture five sizes. The number of inches of sweep corresponds with the commercial number of the bit.

VAN WART, SON & CO.

Hardware Commission Merchants,
BIRMINGHAM, - ENGLAND,
Agents,

VAN WART & MCCOY,

184 & 186 Duane Street, N. Y.

George H. Gray & Danforth,
48 India Street, Boston.

F. W. TILTON,

17 Old Levee Street, New Orleans.

At each of these places a complete assortment of samples of Hardware and Fancy Goods will be found, including all new descriptions. Sole Agents for **John Himmer & Son's Celebrated Harness and other Needles.**

Agents for **Seydel's "Ashantee" Pocket Hammock**

OSCAR IRVING VAN WART & Co.,

FORWARDING AGENTS.

2 South John Street, LIVERPOOL.

SCHOLEFIELD, GOODMAN & SON.

(Formerly JOSHUA SCHOLEFIELD & SONS.)

GENERAL

Hardware Merchants,

BIRMINGHAM, - ENGLAND.

Agents and Sample Rooms.

New York—Edward Frith, 16 Cliff Street.

Boston—H. L. Richards, 18 Batterymarch Street.

New Orleans—R. Rhodes, 71 Camp Street.

Montreal—J. J. Evans 14 St. John Street.

JOHN MAXHIEM,

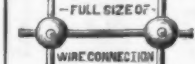
Patented,

June 5, 1862; April 6, 1869

Dec 23, 1873 Jan.

20, 1874.

Manufacturer of



JAPANNED and

PATENT EUREKA

Bright Metal

BIRD CAGES.

Nos. 247 & 249 Pearl Street

NEW YORK.

H. CARTER,
290 PEARL ST., NEW YORK.



Manufacturers of and Dealers in all descriptions of Moulders' and Plasterers' Tools, and Dealers in General Hardware, Glided Copper Weather Vanes, PATENTERS' PATENT CARRIAGE LIFTING JACK, &c.

Moulders' and Plasterers' Tools.

Cutlery.

John Russell Cutlery Co.,

Factories and Office,
TURNERS FALLS, MASS.

Manufacturers of

TABLE CUTLERY, Butcher, Painters' and Druggists' Knives

IN GREAT VARIETY.

Extra Hard Rubber Handle Table Cutlery of our own Manufacture.

Fine Ivoride Handle Table Cutlery, very White and Durable.

Sample Office, 77 Chambers St., N. Y.

NORTHAMPTON CUTLERY CO.,

Manufacturers of all kinds of

American Table Cutlery,

Cook, Butcher, Shoe and Hunting Knives. Sole Agents for Rogers' Cutlery Co.
Plated Forks and Spoons. D. P. GRIFFITH, Manager, 43 Murray Street, N. Y.

FRIEDMANN & LAUTERJUNG,

MANUFACTURERS OF

Pen and Pocket Cutlery, Solid Steel Scissors, F. & L. Shears, Razors,
Russia Leather Straps, Oil and Water Hones, &c.

Sole Proprietors of the renowned full concave patent

"ELECTRIC RAZORS."

Also Agents for the BENCALL RAZORS.

American Table Cutlery, Butcher Knives, &c.

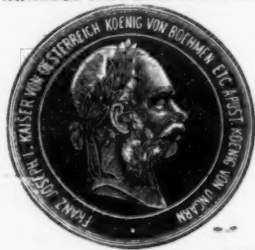
14 Warren Street, NEW YORK. 423 N. Fifth Street, ST. LOUIS, MO.

PETERS BROTHERS,

AWARDED THE MEDAL OF MERIT.

LARGE STOCK OF

VIENNA 1873.



American, German, English

Pen, Pocket & Com-
bination Knives.

Scissors Scissor Cases

Razors, Hones, Straps, &c.,

Heinisch Tailor Shears, &c.,

88 Chambers Street, New York.

TABLE KNIVES AND FORKS OF ALL KINDS,
AND EXCLUSIVE MAKERS OF

And the "Patent Ivory" or Celluloid Knife. These Handles never get loose, are not affected by hot water, and are the most durable knives known. Always call for the Trade Mark "MERIDEN CUTLERY COMPANY" on the blade. Warranted and sold by all dealers in Cutlery, and by the MERIDEN CUTLERY CO., 49 Chambers Street, New York.

THE MILLER BROTHERS CUTLERY CO.,

Manufacturers of

PATENT FINE PEN & POCKET CUTLERY

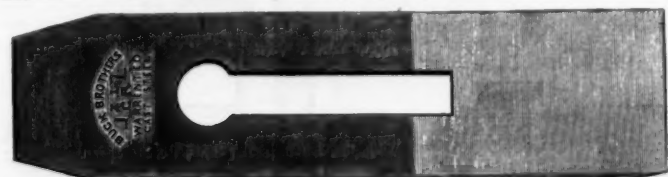
WEST MERIDEN, CONN.

The only knives made that are put together in such a manner that there is no strain on the covering or full part of the knife. We warrant our knives equal in cutting qualities and workmanship to any made, and are acknowledged by English makers as the Best American Knife. We also make

NICKEL & SILVER PLATED POCKET KNIVES

which will not rust or become discolored when used as a Fruit Knife, and their cutting qualities are equal to any other knife. Orders filled from the factory or by

J. CLARK WILSON & CO., 81 Beekman Street, N. Y.



BUCK BROTHERS, Millbury, Mass.

The most complete assortment in the U. S. of Shank, Socket Firmer, and Socket Framing Chisels.

PLANE IRONS.

Gauges of all lengths, and circles beveled inside or outside. Nail Sets, Scratch and Belt Awns, Chisel Handles of all kinds. Orders filled promptly; generally same day as received.

ESTABLISHED 1852.

NEW YORK KNIFE CO.

MANUFACTURERS OF SUPERIOR

Table & Pocket Cutlery,

WARRANTED TO BE MADE OF THE BEST
MATERIAL.

WALKILL RIVER WORKS,

Walden, Orange Co., New York.

THOS. J. BRADLEY, President.

Wood's Hot Water-Proof Table Cutlery.

Handsome, Cheapest, most Durable Cutlery in use.
Wood's Celebrated Shoe Knives. Butcher
Knives a specialty.

WOODS CUTLERY CO., Andover, N. H.
J. CLARK WILSON & CO., Agents, 81 Beekman St., N. Y.

A. TILLMES & CO.,

ACQUITT TILLMES. I. H. CLAUSSEN.

521 Commerce St., Philadelphia.

Wholesale Cutlery.

Sole Agents for Wm. Claiborne's Warranted Pen and Pocket Knives, Razors, Scissors, &c.

SPECIALTIES:
Full Concave Razors,
Wostenholm's Pocket
Knives,
Razor Hones,
Russia Leather Razor Straps,
Wade & Butcher's Razors,
and Cutlery in general.

AMERICAN
PEN AND POCKET KNIVES,

MANUFACTURED BY

PEPPERELL,
AARON BURKINSHAW, MASSACHUSETTS.

My Blades are forged from the best Cast Steel, and warranted. To me was awarded the GOLD MEDAL of the Connecticut State Agricultural Society; also a Medal and Diploma from the Mass Mechanics' Ass'n Sept. 1861.

Cutlery.



JOSEPH S. FISHER,

No. 411 Commerce St., PHILADELPHIA,

AGENT FOR

George Wostenholm & Son,

Washington Works, SHEFFIELD,

Celebrated I-XL Cutlery, Razors, &c.

AGENT FOR

WALTER SPENCER & CO.,

Steel and File Manufacturers,
Rotherham, ENGLAND.

Corporate Mark.



Granted 1777

RICHARD A. TURNOR.

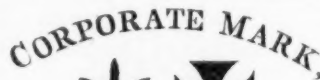
37 Chambers St., New York,

Agent for

F. W. HARROLD,

Hardware Commission Merchant,
BIRMINGHAM.

JOSEPH ELLIOT & SONS,

Manufacturers of Razors, Table Knives, &c.,
SHEFFIELD.

Joseph Rodgers & Sons'

(LIMITED)

CELEBRATED CUTLERY,

No. 82 Chambers Street, New York.

CHARLES PEACE, Jr., Agent.

The demand for Joseph Rodgers & Sons' productions having considerably increased, they have, in order to meet it, greatly extended their Manufacturing Premises and Stock.

To distinguish Articles of Joseph Rodgers & Sons' Manufacture, please to see that they bear their Corporate Mark.

ASLINE WARD,

101 and 103 Duane Street, N. Y.

REPRESENTING

GEO. WOSTENHOLM & SON,

CUTLERY AND RAZORS,

Washington Works, Sheffield.

CORPORATE MARK.



FREDERICK WARD & CO., Sheffield,
Cutlery and Table Knives.

CORPORATE MARK.



ROMER & CO.,
Established 1837.

Manufacturers of Patent Brass Pad Locks for Railroads and Switches. Also, Patent Stationary E. R. Car Door Locks, Patent Plan and Sewing Machine Locks.

141 to 145 Railroad Avenue, NEWARK N. J.
Illustrated Catalogue sent on application.

Patented Steam and Hydraulic, April 1, 1868.



EAGLE PACKING,

Of various sizes for ENGINES and PUMPS, manufactured by JAMES GLANDING & CO., No. 115 Queen St., Philadelphia. What the proprietors claim for the Eagle Packing: 1. Its general adaptation to all purposes for which packing is used. 2. Its durability. It will outlast any other article in use. 3. Its cheapness. It can be furnished to the consumer at a lower rate than any other packing.

PHILADELPHIA CORRESPONDENCE.

PHILADELPHIA, Jan. 25, 1875.

The slight improvement noticed in general business in my last has been steadily increasing, until for the week under review we have a really fair trade to note, and a very much better feeling shown than has been visible for months. Not only is this improvement noticeable in the demand for and prices of pig iron, but it has extended to several kinds of manufactured iron and machinery, and already orders are coming in for both, which indicate a busy summer.

The Iron Age, and especially this correspondence of it, has always been prompt to publish every item of interest connected with iron shipbuilding in our country. We have stood by the industry in both dull and prosperous times, and always endeavored to compel the acceptance of the truth, that the Delaware River was destined beyond question to be the site of numerous extensive works for this specialty.

In confirmation of these statements, it is especially agreeable to announce the establishment of a new iron ship yard on the Delaware, although we must confess to some remissness in not having noticed the fact earlier in the year. The new works are entitled the New York and Philadelphia Engineering and Iron Ship Building Works, is located at Borden-town, N. J., 27 miles above Philadelphia, on the Delaware River, and is conducted by the firm of Holmes, Shaw, Brown & Co. I have not yet had an opportunity of inspecting the plant, but learn it is thorough in all respects, and from personal knowledge of the character of the proprietors can confirm this statement. It was formerly quite customary for mechanical firms in all branches to prefix their title with the word "practical." This is peculiarly applicable to the firm in question, since Mr. Samuel Holmes, the senior partner, served a thorough apprenticeship to iron shipbuilding in one of the largest establishments in Great Britain, remaining with the firm ten years. In 1870 he constructed an iron ship at Quebec, under contract with the Canadian government, after which he came to Philadelphia and was employed up to the close of 1874 with the well known ship building firm of Neale & Levy, at the Penn Works, as superintendent of their iron ship building department. Mr. Holmes is further entitled to notice as the author of a valuable contribution to the science of iron ship building, in a communication read before the Franklin Institute in 1873, on the subject of longitudinal framing. The Mr. Shaw of the firm is well known here as a thorough engineer, for eight years past superintending engineer for S. & J. M. Flanagan's line of steam towboats, and also in the same capacity for the Southern Mail Steamship Company. Mr. Brown, for ten years an engineer in the United States navy, has since been engaged as consulting engineer and boiler builder in his own name. The firm starts under favorable auspices, having orders on hand for engines and boilers for Cuban account, and a contract for the construction of an iron river steamer of some size. They are further prepared to construct vessels up to 2500 tons burden. To that portion of the iron trade, and it is rapidly growing larger, about adopting the Whitwell fire brick hot blast, it will be interesting to state that the new firm will shortly be charged with constructing the valves, iron jackets and general iron work connected with this stove, and will erect a shop purposely for this work. As Mr. Holmes is thoroughly familiar with the construction of these stoves, coming from Stockton-on-Tees, the location of the works of Wm. Whitwell & Co., and more over enjoys the entire confidence of the patentee, Mr. Thomas Whitwell, and his agent in this country, Mr. Wm. M. Bowron, furnace owners adopting this hot blast will not be subjected in the future to the inconvenience and difficulty hitherto felt in obtaining the iron work properly constructed to the patentees' specifications. It is but fair to Mr. Holmes to add that under his superintendence was built last spring the steel torpedo boat, *Eolite*, for the Khedive of Egypt, which boat made the extraordinary speed of 25 miles per hour on her trial trip. In addition to their works, the firm have a city office at 426 Walnut street, Philadelphia, in connection with the office of the Whitwell hot blast, thus combining the somewhat diverse industries of ship building and blast oven construction.

The items for the week are of some interest. Quite a commotion was created by a rumor that the Senate committee on navy yards had recommended the abolition of our League Island navy yard. Subsequent information not only proved this incorrect, but that the committee recommended an appropriation to fit out this yard in the most thorough manner, with a view of consolidating some of the Eastern navy yards here. Referring to the iron storage facilities of the Pennsylvania Warehouse Company, we note that the second yard of the company has been opened in this city at the junction of the Philadelphia and Trenton and Reading Railroads. This yard comprises some three acres in extent, and offers all necessary facilities for the storage of pig iron. Great inconvenience, danger to travel, and numerous accidents have for some years occurred from the running of the trains of the Philadelphia and Reading Railroad Company through the streets of the city, on Ninth street and crossing Broad street. The subject has been under discussion by the city authorities and the company for some time, and a plan of relief now adopted, which includes some engineering features of interest. The company proposes to build a grand union depot for all their roads at Ninth and Spring Garden streets, within a block of their present Germantown and Norristown R. R. depot. To relieve the city streets from the danger of steam trains it is proposed to construct an elevated road following the line of the track on Ninth street to the Germantown junction with the Philadelphia and New York road beyond Broad street. This elevation will be constructed of solid masonry with street bridges, and the track will be thirteen feet above the street in the clear, the trains entering what will be, of course, the second story of the depot. The Broad street depot will be abandoned, and another for local traffic erected further west. The cost of the new elevation, irrespective of the depot, is estimated at about \$1,500,000, and it will be worth many times this sum to our citizens.

The Centennial buildings have been visited, on Saturday, by the Congressional Committee and a number of heads of departments, who came on specially to inspect the work, and were, in company with the President, entertained by Mr. Childs, of the *Ledger*. The Franklin Institute held its annual meeting during the week, at which officers were elected. The financial report shows the agreeable cash balance on hand of \$61,363, and the report on the exhibition showed the following interesting figures, viz.: The whole number of paying visitors was 267,638, beside members of the Institute, their ladies, and minors, and persons admitted on complimentary tickets issued to the press, and to others whose liberality it was desired to recognize. Making due allowance for these, it may be said that the exhibition was visited by one-third of our population. The number of applications for spaces was 1538. The number of entries for exhibition, many of them covering numerous items and large displays, was 1251. The number of steam boilers in operation was 9, of 316 horse-power in the aggregate, consuming 267 tons of coal. There were three steam engines driving shafting, 22 driving pumps, and 11 driving particular machines. The whole number of steam engines at work or in motion was 46. The whole number of machines in motion was 251. The net profits of the exhibition are expected to foot up \$52,171-00. A full pamphlet report of this, including the awards, will shortly be published. Professor Robert E. Rogers and Bloomfield H. Moore, Esq., were elected president and vice president, and Mr. J. B. Knight, secretary. To the latter gentleman the success of the exhibition was largely due. It is to be noted that the Institute has awarded to the Harrison safety boiler a silver medal for "the best evaporative efficiency, best economical capacity for generating steam, and best dynamic value of steam."

Our annual statement of foreign imports shows the total value of iron imported (all kinds) for 1874, at this port to have been \$530,417 only. Trade appears to be fairly launched for the season, and we need no further complaints of dull times.

Nail Puller.

We show in the accompanying illustration a new nail puller manufactured by the Union Hardware Company, No. 130 Chambers and 50

Warren streets, New York. It is a very strong and simple tool, and cheap in price. The manufacturers announce their intention to use the best materials, and to furnish an implement that shall be cheaper than any other nail puller, and equally effective and durable. Its construction and operation are so clearly shown in the illustration that no description is necessary.

The Blochairn Iron Company.—A correspondent forwards the following information, which affords a tolerably accurate idea of the troubles which have lately overtaken concerns floated high and dry by the flood tide of prosperity, and left on the rocks by the ebb—the very low ebb—to which trade has now descended: "The directors of the Blochairn Iron Company, limited, in their capacity of liquidators, have issued a report to the shareholders and creditors of the company, it being believed that they have been led to do so by the action that has been taken by a large number of the shareholders for having them superseded by an official liquidator. When the company found themselves in difficulties, the shareholders were startled by the information that, in the course of eleven months, the company had sustained losses to the amount of £135,048. By the present report, it seems that these losses were underestimated to the extent of £24,703 12¹/₂; so that they are now set down at £159,751 11¹/₂. Referring to the forthcoming petition to the court of session for the appointment of a liquidator, the directors say they would much regret, now that the liquidation has so far progressed, to see the funds of the company diminished by litigation as to the proper mode of continuing it, and they add that if it be the wish of the shareholders and creditors, they will be happy to be relieved of the business of the liquidation. Up to this time the creditors have been paid 10 per cent, and it is believed that before the remainder can be met, the whole of the shareholders' money will be gone."

New British Stock Companies.

Our English correspondent sends us the following list of new companies organized in Great Britain during 1874:

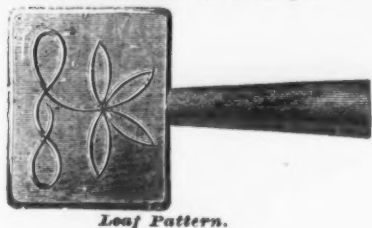
	No. of Capital Co's. Authorized.	Capital offered.	Deposits.
Mfg. & Trading.....	61	£10,000,000	£6,188,500
Railways.....	8	4,760,000	4,010,000
Investment.....	7	4,685,000	2,929,480
Banking.....	3	3,000,000	1,750,000
Colliery.....	15	1,960,000	1,442,500
Insurance.....	4	1,110,000	555,000
Financial.....	2	1,100,000	1,050,000
Mining.....	10	754,000	290,000
Shipping.....	2	700,000	450,000
Waterworks.....	3	630,000	570,000
Telegraphs.....	2	630,000	48,000
Tramways.....	1	280,000	30,000
Gas.....	1	174,000	124,000
Hotel.....	1	10,000	10,000
Miscellaneous.....	5	1,145,000	462,000
Total.....	128	£30,888,000	£30,512,480

The new issues by companies previously formed were as follows:

	Capital offered.	Capital called up.
Railways.....	£17,181,300	£14,315,585
Collieries.....	2,365,000	2,065,000
Investment.....	2,800,000	1,480,000
Manufacturing & Trading.....	849,740	746,780
Gas.....	435,000	91,500
Banking.....	370,000	45,000
Financial.....	250,000	91,450
Water.....	228,000	317,600
Shipping.....	1,000,000	100,000
Telegraphs.....	100,000	90,000
Insurance.....	35,000	30,000
Mining.....	1,215,300	1,096,975
Total.....	£45,629,980	£30,577,590

H. D. SMITH & CO., PLANTSVILLE, CONN.

Patent Embossed Steps.



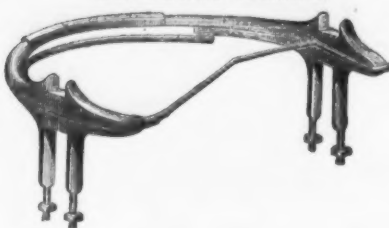
Leaf Pattern.

King Bolt Yokes.



Established 1850.

No. 6 Fifth Wheels.



1871 Pattern Shaft Couplings.



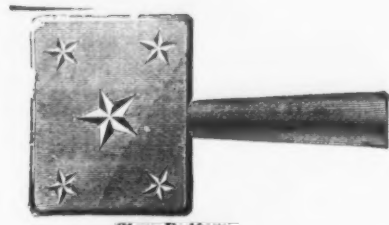
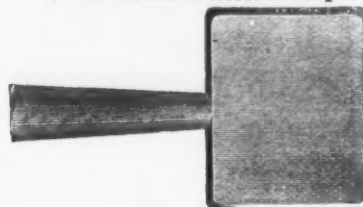
Patent Cross Bar Steps.



Upper View.

Lower View.

Solid Plain Pattern Steps.



Star Pattern.

Smith's Improved Philadelphia Pattern Slat Irons.



MANUFACTURERS OF A LARGE VARIETY OF FIRST-CLASS

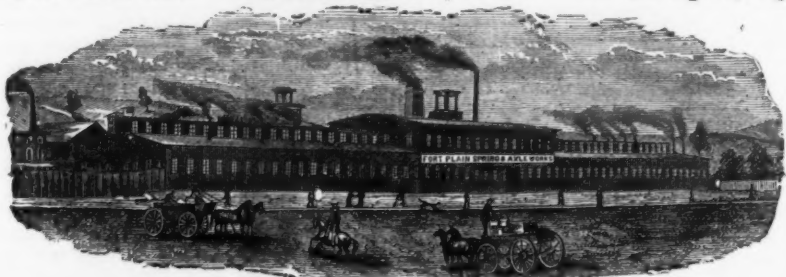
FORGED CARRIAGE IRONS.

Send for Price List.

FORT PLAIN SPRING & AXLE WORKS,

CLARK, SMITH & CO.,

Green Jacket Axles. FORT PLAIN, N. Y. Fine Carriage Springs.



MANUFACTURERS OF

English and Swedes Steel Springs, and Iron and Steel Axles.

Execute orders promptly for

Black, Bright, Tempered and Oil Tempered Springs,
any Pattern or Style. Also for AXLES of any description, from a COMMON LOOSE
COLLAR to the FINEST OF STEEL.

Our facilities for manufacturing are very extensive, and with our recent additions of new and improved
machinery, we defy competition.

Send for Price List and Descriptive Circular.

CARRIAGE BOLTS.

Buy the Best.

Clark's Patent
Carriage Bolt.

Best Bolt manufactured for all kinds of agricultural machinery. Will not split the wood, and can not
turn in its place.

MANUFACTURED BY

CLARK BROS. & CO., Milldale, Conn.

Also Manufacturers of

Flow and Machine Bolts, Coach Screws, Nuts, Washers, Tire Blanks, Rivets, &c.
Send for Illustrated Price List

WILSON MANUFACTURING COMPANY.,

NEW LONDON, CONN.

SOLID BOX VISES.

With or without Convex and Concave Washers.



Jackscrews, Braces, Coffee Mills, Turning Lathes; Clamp
Heads and Screws; Parallel Bench Vises; Sash Pulleys, Ho
House Pulleys, Composition Cocks, Bench Screws, Vise Screws
Gridirons, Drill Stocks and Bows, Box Chisels, Rivets,
Sheaves, Block Pins, Composition Roller and Iron Bushings,
Riggers' Screws, Caulkers' Tools, Pump Chambers, Belaying
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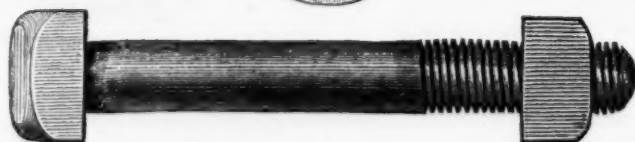
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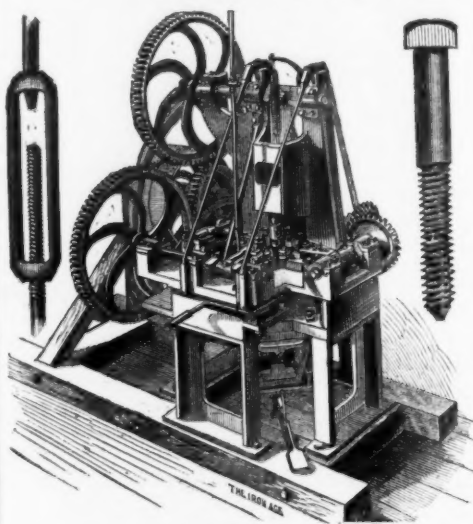
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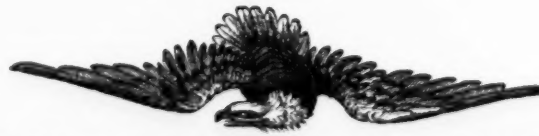
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JAMES C. BAYLES - Editor.
JOHN S. KING - Business Manager.

New York, January 2, 1875.

Until the 1st instant the postage on newspapers was paid by subscribers at the office where the paper was received, the yearly rates on the different editions of *The Iron Age* being as follows: Weekly, 40 cents; Semi-Monthly, 40 cents; Monthly, 34 cents. Under the provisions of the new postal law, which went into effect on the 1st instant, prepayment at the office of mailing is required, at the rate of two cents per pound for the Weekly, and three cents per pound for the Semi-Monthly and Monthly, which will make the postage as follows on the different editions: Weekly, 50 cents; Semi-Monthly, 50 cents; Monthly, 15 cents.

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City Subscribers will confer a favor upon the Publisher, by reporting at this office any delinquency on the part of carriers in delivering *The Iron Age*; also, the loss of any papers for which the carriers are responsible. Our carriers are instructed to deliver papers only to persons authorized to receive them, and not to throw them in hall ways or upon stairs; and it is our desire and intention to enforce this rule in every instance.

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American Car Wheels for English Railways.

A comparison of the number of accidents and injuries to passengers carried on the railways of Great Britain, with those on American roads, shows that we are conducting the travel on our railroads with greater safety to life and property than is secured abroad. The reasons for this may be found, probably, in the more progressive spirit of American railway managers in adopting new contrivances for the safety of life and property as the best means toward the financial profit of their undertakings. The report of the Philadelphia and Reading Railroad Company, lately published, shows that nearly seven millions of passengers were carried by that company during 1874, without injury to any by fault or negligence of the company. This is an example of the very best management in railway transportation, and is, so far as we

know, unequalled by the returns of any foreign company. The means by which this immunity from accident is attained are undoubtedly to be found in the adoption of the late improvements in controlling the speed of trains, as by the power brake; in lessening the danger of derailment, as by the Wharton safety switch; in an improved system of telegraphic signals, and in the substitution of iron for wooden bridges.

Another, but less frequently noted safeguard against a different character of accidents, is the general use in the United States of the cast iron wheel with chilled tread. This article of railway carriage construction, almost unknown in Great Britain, has greatly added to the security of railway travel in this country, and deserves the attention of the English companies. The late railway accident near Oxford, on the Great Western Railway of England, by which over a hundred persons were killed or badly injured, was due to the bursting of a tire on a wheel of the type most generally employed abroad. Such an accident is now very rare with us from any cause, and almost unknown from the breakage of wheels under passenger cars. In the correspondence which always follows such a disaster abroad, one writer to the *London Times* calls the attention of that journal to the "better things" in use on American railways, among which he enumerates, first, cast iron "tireless wheels" for railway carriages; second, a system of continuous brakes under control of the engineer, and, third, commodious and comfortable drawing room and sleeping carriages. Of the American wheel he says:

Notwithstanding the repeated endeavors to obtain the ear of English railway engineers of weight, with a view of their trying to get the cast iron wheel adopted in England, I have in each case failed. As a rule, the chief objection given has been that cast iron wheels would not suit our climate, where the changes of temperature are so frequent and sudden; and other objections, equally fallacious, have been urged. The fact is, the changes of temperature in the United States are far more frequent and far more sudden than with us.

My object, sir, in addressing you is to urge you to exert your powerful influence to get the directors, managers and engineers of our railways to pull the scales of prejudice from their eyes and condescend to try, with view of adopting, the cast iron tireless wheel of the Americans, and thus, humanely speaking, save themselves and the country from such wholesale catastrophes as that of the Shipman massacre.

It is presumable that, under the pressure of public opinion, as expressed through the leading journals of England—even so very conservative a body as a British railway board might be induced to adopt the American cast iron wheel. In this direction lies the development of a very important export trade for our iron manufacturers, and one which, properly worked up, would furnish business for a number of furnaces and wheel foundries now idle. The great demand for, and high prices of, cold blast charcoal wheel iron during the excitement attending the building of so many new railways previous to 1874 greatly stimulated the erection of charcoal furnaces, and the panic found them with large stocks of wheel irons, idle foundries, and no demand until the price of this grade of iron has declined from \$65 per ton, in 1872, to \$40 at the close of 1874. According to the estimates of Mr. Edward Samuel, in his review of the trade for 1874, no less than 125 charcoal furnaces, with an aggregate productive capacity of 9023 tons per week, were out of blast at the close of the year, while the stocks reach near 275,000 tons, of which it would be fair to assume one-half, or 137,000 tons, as cold blast wheel irons.

The history of car wheels in this country shows that the disadvantages of the spoke wheel, and, indeed, of all combinations of wrought iron with cast iron or steel, were early discovered. So far back as 1838, Mr. Geo. G. Lobdell, of the Wilmington Car Wheel Works, and whose views on the manufacture of car wheels, as given in a paper lately read by him before the Master Car Builders' Association, will be found in another page of this issue, invented the first wheel cast in one piece, which was known as the "double plate convex wheel," the plates being convex on the outside, while, to allow for unequal contraction in cooling, the hub was parted transversely. This wheel admitted of a good chill, and, when properly secured to the axle, possessed great strength. In 1847 the late Asa Whitney, of Philadelphia, introduced a single plate wheel with corrugated plate and the patented annealing process while cooling. To trace the various improvements and innovations in the manufacture of wheels would require too much space. The production of car wheels in this country has now reached, in prosperous times, some 700,000 annually, consuming over 150,000 tons of iron, a portion of which is old wheels melted, but the immunity from accident in their use is due to the almost exclusive use of cold blast charcoal iron which possesses the property of chilling at the surface. The toughness of the metal used thus affords the greatest possible strength

in the web or disc of the wheel, while the chill gives a degree of hardness and durability to the surface or tread which has never been attained with either the use of wrought iron or steel.

The export trade in car wheels has already attained respectable proportions, having been in 1873, 7515 wheels, most of which, however, were for South American account, or were shipped to Europe, generally in the form of street car wheels. In regard to the life of chilled wheels, it was stated at a late meeting of the Masters Car Builders' Association, that the report of the Lake Shore Railroad showed that the wheels removed during the six months previous to April 1st, 1874, had averaged 57,000 miles, the smallest average being 54,000 miles. These were 33 inch wheels, run under heavy cars at high speed. In this connection, Mr. Davenport, of the Erie Car Works, stated that he knew of iron wheels which had run 200,000 miles and were yet good. Another wheel founder stated that his company sold car wheels to the Pullman Car Company on a basis of 50,000 miles, receiving credit for any excess, and standing the loss for any that fell short. Their lowest average in mileage for the past six months was 59,000 miles.

We give these details for the benefit of our English readers who may wish to insure the safety of railway travel by an important factor. To the objection offered to the correspondent of the *Times*, that the sudden changes of climate in England unfitted our wheels for use there, it need only be said that to our discomfort we admit of much greater changes of climate here; that cold does not necessarily render iron brittle, and that in the case of a car wheel the duty it performs necessarily elevates its temperature in a few miles of work above any possibility of rupture from frost, even if frost weakened it. It would be an easy matter to show that the economy from the use of American car wheels, both in first cost and increased mileage, would make them a desirable purchase for English railways. This would be here useless, however, as the demonstration, to be effective, must be made on their own roads and under their own conditions. As the Pullman parlor and sleeping coaches have been introduced abroad, this would seem, if indeed they are allowed to be run on American trucks, the opportunity of testing the superiority of American cast iron wheels. To the American iron trade this subject offers matter for thought, investigation and enterprise, and if successfully carried out, of great profit.

In our issue of next week we shall present our readers some facts of unusual interest, showing the quality of American car wheel irons, as determined by recent and thorough mechanical tests. The results of these tests are so remarkable that they were not accepted by the experimenters until repeated tests had given an equally high average. From the tables which will be given, it will be seen that in urging the advantages of American car wheels upon foreign railway managers we have claimed for them no greater excellence than they actually possess.

Hard Pan.

In some respects the situation in Germany presents a curious parallel to that prevailing in this country at the present time. The *Cologne Gazette*, in a review of the state of trade in Germany, says:

In 1874, although the great bubble schemes burst in the summer of 1873, and although last year's plentiful harvest of corn and wine came to our relief, the consequences of the crisis are still felt. Numerous undertakings are depreciated, and even more lamentable than the losses of the promoters are the mischievous results of the sudden excessive rise in wages, which could not possibly last, the luxurious habits, the strikes, and all that these involve on the laboring classes, and the whole industrial life of the German nation. Habits of indolence and gluttony have been established which it will be hard to eradicate. In many establishments at Berlin work is still suspended at noon on Saturday, and the natural result is that the products of German industry have become dearer, that our exports diminish, and that we import many things from abroad which we could very well manufacture ourselves. A characteristic example of this is that the city of Berlin is procuring 300,000 centers of iron piping for the canalization scheme from England, instead of employing native industry. If, as is alleged, the English supply it at half a shilling per center cheaper than our own works, no objection can be offered to the saving of 150,000 thalers. The truth is, that as regards the production of iron, which we thought was a nucleus of German prosperity likely to surpass foreign countries, our hopes have speedily been dispelled. One good effect of the scarcity of employment, in itself very deplorable, which has occasioned numerous dismissals at Berlin at the end of the year, is that, as the promises of the socialists and other demagogues have not been realized, the workmen now find themselves obliged to revert to their old habits of industry and frugality.

Like ourselves, the German people are getting down to what, in this country, we call hard pan. Like them, we must accept as philosophically as may be, the reaction which follows the artificial and, to a great extent, delusive prosperity incident to a season of speculative excitement. The few years following a great war are usually characterized by abnormal activity in cer-

tain directions, a high level of values and high wages. So long as the speculation lasts values and wages are, to a great extent, maintained. With us this period has been protracted long beyond the general expectation, and the panic which has been predicted every year since the war, did not come until we had ceased to expect it. The delay was fortunate, no doubt, for in the interval we have made a great industrial progress, and enjoyed much of real prosperity. But now that the change has come, we must adapt ourselves to it precisely as we must have done had it come five years sooner. With us there is reason to believe that the panic means merely a change to a substantial basis of prosperity from one to some extent artificial and unsubstantial. Nothing now seems to stand in the way of substantial improvement except the unwillingness of the working classes to accept the inevitable. Among those who compose the trade unions in most of the great departments of national industry, the idea seems to have gained ground that the offer of lower wages is an effort on the part of employers to take an unfair advantage of the workmen; that no such reduction is necessary; and that, by refusing to accept lower wages they can compel employers to withdraw their offer and accede to the terms insisted on by the unions. Hence, we witness the strange spectacle of an army of workmen voluntarily abandoning work at a time when not more than thirty in every hundred could obtain employment on any terms, and not that proportion except for the very natural and laudable desire on the part of employers in all trades to make as liberal a provision as they can for their work people during these hard times. The only result of this foolish policy will be that, after spending heavily in debt to shopkeepers, who thus acquire a mortgage on their future earnings, the workmen who now refuse the wages offered them will be glad to secure work where they can find it. Our national prosperity for many years to come will be in proportion to the cheapness of our production of useful commodities for consumption and export. In no other way can we retain our home markets and secure a foreign demand for our surplus products. The tariff has established our industries on a broad and substantial basis. If we can secure a continuance of protection for them, so much the better; if, in the changes which now seem to be inevitable in our national politics, protection should be withdrawn, those industries must stand alone. In any event the cost of production must be reduced, and the reduction must begin with wages. Labor will lose nothing in the end, for prices have declined and are still declining, and there is no reason to believe they can be again forced up, until the country is involved in another war, which shall bring its attendant evils and leave us its heritage of curses. The trade unions may temporarily obstruct the return of prosperity on the new basis of lower values, but only temporarily, and labor will suffer first and most heavily from the disorganization and demoralization resulting from strikes.

The Centennial Exhibition.

Work upon the Centennial buildings is making good progress, and the liberal contributions to the funds of the Board of Finance, which are now coming in, give promise that the preliminary preparations will not be seriously retarded for lack of money. This is as we predicted last year, when it was proposed to abandon the enterprise upon the failure of Congress to make an appropriation to carry on the work. Now that the time for the exhibition draws near, public interest is increasing, and aid is coming in from quarters which have hitherto neither encouraged nor assisted the undertaking. The people now see that, instead of being local, the exhibition is in the fullest sense national, and that to have it fail of complete success in any essential feature would be humiliating to the national pride. The interest now felt will steadily increase, the contributions will continue to come in, States will vie with each other in organizing imposing displays of their natural products, manufactures and arts, and among the most eager and enthusiastic will be the millions of eleven hour converts, who failed to discover the importance of such an exhibition until their assistance and encouragement was no longer needed to insure its success.

From present appearances we feel safe in predicting that the Centennial Exhibition will be creditable to the American people. Profiting by the experiences of other nations, we may hope to avoid the mistakes and delays which have marred the success of previous international exhibitions. We understand that the applications from intending domestic exhibitors call for allotments of space considerably in excess of

the total accommodations provided for American exhibits. The principal countries of the world have signified their intention to take part, and we may expect a display of foreign products and manufactures quite as extensive and varied as that collected at Vienna. We may also expect an influx of visitors from all parts of the world, attracted hither by curiosity to see this young republic under circumstances so favorable, which will probably lead to an increased foreign demand for American manufactures, especially labor saving machinery and machine-made commodities, and an inflow of foreign capital. It is unnecessary, at this time, to re-enumerate the direct and indirect advantages which will result from the exhibition, especially as the public are already beginning to discover and appreciate them; but it is safe to predict that it will quicken the pulses of trade and stimulate national progress in many directions.

Will the Centennial pay? With the American people this question naturally presents itself in connection with this and all other undertakings. It may, we think, be answered unhesitatingly in the affirmative. Probably no country of the world has so large a population of people in comfortable circumstances, able to visit such an exhibition without inconvenience. Philadelphia's position is such that the residents of the most populous of the Atlantic seaboard cities can reach it in a few hours by rail, and the attractions will be so great that all who possibly can go will do so. Indeed, it may be said that almost the entire well-to-do population of the country will visit the exhibition once or many times during its continuance. A large revenue may therefore be expected from admission fees, and if the earnings are not sufficient to pay a dividend upon the Centennial stock, we may, at least, expect that the principal will be returned. But were these expectations disappointed, the exhibition, if otherwise successful, would still "pay" the country. The direct and indirect advantages therefrom resulting, will be great enough to more than offset any possible difference between the amount expended and the amount available at the close of the exhibition for division among the stockholders. We do not think that stockholders need feel any uneasiness as to the safety of their investments, but it would be a shortsighted and narrow-minded policy to hesitate in advancing pecuniary aid to the undertaking on that account. We should be sorry to see the Centennial degenerate into a speculation to make money for the stockholders, and while the managers of the enterprise should consider the interests of the stockholders in everything, we hope they will make the success and popularity of the exhibition their first care, feeling sure that those who have advanced money to carry on the work have had very modest expectations as to the profits likely to result therefrom.

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This convenient little volume contains much interesting and valuable information, skillfully compiled, and will prove handy for reference by those for whose use it is especially intended. It gives the standard tables for architects' and engineers' use, which are designed to save the trouble of making calculations, tables of standard weights and measures, wire gauges, specific gravities, and much other matter of interest. It is bound in choice Russia leather, is of convenient size for the pocket, and is provided with blank pages for memoranda.

The World's Supply of Tin.

From statistics and reports received by late mails from England and the Continent, we condense the following facts and observations, which may assist us in forming some ideas regarding probable or possible developments in this metal:

The English Mines.—Some deficiency in the supply for 1874 seems to have been apprehended, but these fears were not realized. A good many mines had been working at a loss, others without profit, but there has been no slackening of activity in the county of Cornwall, and thus the aggregate production has been as large as that of the preceding year.

The Amount of Banca Marketed.—The Dutch Trading Society placed on the market, in six bi-monthly sales, 4049 tons Banca, keeping on hand, unsold, at the termination of last year, in Holland, 3858 tons, against 3708 the year previous.

The Billiton Sales at Batavia.—The Java auctions comprised, in six bi-monthly sales, 3157 tons.

The Supply from the Straits of Malacca.—It will be remembered that in 1873 there occurred serious disturbances amongst the natives inhabiting the districts of production on the great Peninsula—that of Larote, particularly, suffering severely. But owing to the energy displayed by the English in quelling these riots, order was soon restored—not, however, without resulting in an immediate deficiency of supply of some 3000 tons, as compared with the preceding year. Gradually, production has recovered in 1874, al-

though not as yet reaching that of 1872 by some 2700 tons; in other words, the interruption caused a total falling off some 5700 tons in two years, and would have proved a serious matter but for the vigor displayed in Australia.

Australian Production.—There are few instances on record in mining matters, in all likelihood, that will offer a parallel to this Australian development in tin production. From 150 tons in 1872, production there was multiplied twenty fold the ensuing year, in order to be again nearly doubled last year. The world's supply may, therefore, be summed up as follows, as compared with the preceding two years:

	1874.	1873.	1872.
United Kingdom.....	10,000	9,970	9,860
Banica.....	4,049	4,333	3,269
Billiton.....	3,137	2,980	2,946
Malacca.....	7,149	6,963	9,785
Australia.....	5,800	2,990	180

Total.....30,135 27,358 35,644

It will be perceived that, in spite of the temporary deficiency in Malacca, Australia has sufficed to increase the general supply 17½ per cent. in the short space of two years. No wonder, then, that with an inadequate increase of consumption prices should have declined from an average of £146 for Straits tin in 1872 to one of £132. 10/ in 1873, and £98 in 1874.

Consumption.—The aggregate consumption of Europe and the United States, in 1874, is estimated by the European statisticians at 28,500, against 26,000 in 1873 and 27,000 in 1872. The hope is expressed in England that with the lower rates now current for both iron and coal, greater impetus will be given to activity in manufacturing tin plates, and that the consumption of tin be thus stimulated.

Next in order comes the

	1874.	1873.	1872.
Dec. 31. Dec. 31. Dec. 31.			
London stock of foreign.....	2,649	1,022	736
Straits stock landing.....	248	839	170
Straits afloat for London.....	1,574	585	619
Australian afloat for London.....	1,500	1,000	1,000
Banica on warrants in Holland.....	503	684	1,111
Billiton on warrants in Holland.....	1,019	829	479
Unsold Maatechappi, Banca stock.....	3,858	3,708	2,146
Banica afloat.....	309	274	1,357

Total.....12,494 9,488 7,037

Now that the full figures up to the close of the year are in hand, we find that we are borne out in our remarks at foot of our own annual review: "It will consequently require a large and healthy trade early in the coming year, in order to mend the statistical position. On the other hand, it cannot be denied that tin is comparatively cheap."

The statistical position of the metal, it will be seen, is far from being a reassuring one. It will, indeed, be perceived that consumption in 1874 increased but 2500 tons, while at the very outset of the present one we start with an excess of about 3000 tons in tin in sight. Even admitting, then, that with a general revival in the metal trade, both in Europe and America, we exceed the consumption of 1874 by 5000 tons, 3000 tons of this increase go for nothing at the very start, while Malacca is now fully restored to its productive capacity, and Australia may, with the example of the past three years before us, prepare us another surprise in the way of rapid development.

The highest price which Straits tin has attained during the past three years was £160, and the lowest £87. Australia, in fact, has been and remains the great disturber of tin values; that country is very remote, and, although New York is in constant correspondence with that distant corner of the globe on the very subject of tin, we have, as yet, been unable to procure any reliable data as to the probable future supply from that quarter, which has been and remains shrouded in mystery.

Viewing then the general position of the tin supply in the light shed upon it by the latest European statistics, and prognosticating from them as to the probable ruling of values in the more immediate future, an impartial glance cannot fail to carry the conviction to our minds that the prospect for enhanced values is in the highest degree problematical, unless, as of old in Holland, the capitalists of Europe should think differently, and deem the metal about the safest thing to invest their spare cash in. We should be very much surprised to see them arrive at such a conclusion.

Important Federation of British Trade Unions.

Our English correspondent sends us the following:

I have several times mentioned that the larger and more powerful trades unions of the country were desirous of federating themselves in such a manner as would give a complete and firmly united organization on a scale equal to that of the employers. They have now, I believe, sketched out a scheme for effecting this purpose, and have just issued a circular on the subject, of which the following is a copy:

"To the Officers of the various Organizations of Workmen connected with the Iron and Building Trades:

"GENTLEMEN—We, the undersigned, have been instructed by the councils of our respective associations to invite your attention to the importance of a federation of the various organized bodies which at present occupy comparatively isolated positions.

"The powerful organizations of employers which have recently been formed, and the establishment of assurance companies for the protection of employers in their contests with workmen, are an evidence to us that we shall, ere long, be compelled to federate together, in order to successfully meet the wealthy and influential combinations which capitalists have now formed.

"This question was discussed at the Sheffield Trades' Union Congress, but without any practical result. The idea of a federation of trades councils, which appeared to find favor with the

Congress, is really of little value. The large and wealthy societies, with important interests at stake, can never submit to having their members levied at the discretion of local and irresponsible bodies; and any increased facilities for sending round the begging box will utterly fail to produce any real assistance in cases of emergency.

"What is really required is a federated union of those societies which are already organized on sound financial principles, for the purpose of creating a fund available in any important trade struggle in which the course pursued by the workmen merits the sympathy and assistance of the trades thus combined for mutual protection. Remember that if this is not done by the amalgamated trades, the employers' and capitalists' federated unions will be sufficiently strong to batter down in detail the whole of the unions in the country.

"Whether this object can be best attained by the establishment of a guarantee fund, to which each society shall annually contribute in proportion to the number of its members; or whether some better and simpler method of attaining the desired result can be suggested, are matters which we do not at present propose to discuss. But we would suggest that, in order to insure success, it is desirable that we should at first limit our operation to trades already well organized, and we can afterward widen the scope of our federated association whenever circumstances may render such a course desirable.

"If, after due consideration, you should consider that a federation of the various societies in the iron and building trades is desirable, you are requested to express your approval by letter, in order that the necessary arrangements may be made for a meeting of representatives of the various societies interested in the movement, to be held during the sitting of the Trades Union Congress at Liverpool in January next. (Signed)

"JOHN KANE, Amalgamated Ironworkers' Association, Darlington.

"JOHN D. PRIOR, Amalgamated Carpenters and Joiners, Manchester.

"ROBERT KNIGHT, Boiler Maker and Iron Shipbuilders' Association, Liverpool."

Philadelphia.

Mr. W. Hepworth Dixon, the distinguished author of *Greater Britain*, has written a letter from Philadelphia to the *Liverpool Mercury*, from which we take the following:

The growth of Philadelphia is, in truth, amazing. Men are living in Walnut street who recall a day when she was not as large as Croydon. She is now bigger than Berlin—nearly as big as New York. In 1830 she was about the size of Edinburgh. Ten years later she was as big as Dublin. In another ten years she had outgrown Manchester. In 1860 she was ahead of Liverpool. At the present moment Philadelphia is more than equal to Manchester, Liverpool and Sheffield combined. If the population of Dublin and Edinburgh, York, Lancaster and Chester, were counted in one tale, they would hardly make up half the numbers who live in Philadelphia at this present day. If size is but another name for power, the City of Brotherly Love is metropolitan.

Leaving out of our account the more than doubtful figures as to Chinese cities, Philadelphia claims to be the fourth city in the world, admitting no superior in size save London, Paris and New York. She overlaps all other rivals. She is bigger than Moscow and St. Petersburg—the two capitals of Russia—put together. The three capitals of the Austro-Magyar monarchy—Vienna, Pesth and Prague—fall far below her numbers; nay, she has left behind her in the race of progress the four combined capitals of United Italy—Rome, Florence, Naples and Turin! She claims to have at the present hour a population somewhat exceeding 1,100,000 souls!

Yet there is nothing accidental in the growth of Philadelphia. She has not been made a royal residence like Rome, the center of a new imperial system like Berlin. No great discovery of mineral wealth has drawn to her neighborhood the enterprising spirits of all nations, like San Francisco. She has not become the chief entry of immigrants from Europe, like New York. She has not sprung into a fashion like Brighton and Saratoga. She has not owed her fortune to having been a free port like Livorno, or to her having taken the fancy of a Caesar, like Madrid. Her growth is natural growth. We notice an abnormal growth in many towns. A railway bridge secured prosperity to Omaha; a line of docks made Birkenhead; a spring of oil gives life to Petrolia. Philadelphia owes her wealth to general causes, and her greatness is not jeopardized by the failure of a dozen industries.

The sudden growth of modern Rome, and the enormous splendor of Berlin, are not so singular as the growth and splendor of Philadelphia. No city in our time has thriven so much as Rome since she became the capital of Italy; but Rome, after all, is, in point of population, a sixth-rate town. In three years London adds to her numbers more people than cluster on the Seven Hills. In four years Philadelphia does the same. No one supposes that Rome will grow for ever as she is growing now. A new government, with a court, an army, and a parliament cannot enter every year. Berlin has also grown with an amazing swiftness, and the capital of an imperial Germany may feel the impulse of events longer than Rome; for Germany is a bigger country than Italy, her State system is less parochial, and more of her chief citizens, both civil and military, will find their interest in being at the Emperor's court. Yet in Berlin, as in Washington, Madrid, and other artificial capitals, the limit of this accidental growth must soon be reached. Berlin is not, like London and like Philadelphia, a great commercial center, with a port sufficiently near the sea for purposes of trade. Berlin is land-locked,

like Madrid. Few things are more certain in this age of change than that the future capitals of the world will stand on both the elements, and be, as Constantine said of old Byzantium, accessible at once by land and sea.

Philadelphia can boast of her approaches both by land and sea; yet of a situation free from all the ordinary chances of assault in time of war.

The other day I saw a calculation by a clever hand in Pennsylvania, showing that in 25 years Philadelphia will have passed New York, as she has already overtaken Constantinople, and in 35 years more will have overtaken Paris; so that she will then be in a position to face to face with London, owning no other rival on the earth.

Railroad Accidents in 1874.

The *Railroad Gazette* of this city, an excellent and well conducted journal, publishes the following: Our monthly record of accidents to railroad trains gives the number of accidents and of those killed and wounded by them for the twelve months ending with each record, so that so far as these items of information are concerned, we can give nothing better than the figures for the calendar year, which is the second during which we have recorded them. For the two years they compare as follows:

	No. of accidents.	Killed.	Injured.
1873.....	1,283	276	1,172
1874.....	978	204	778

Decrease.....305 72 394

Per cent. of decrease.....23.77 26.05 33.62

The decrease, it is seen, is a very marked one, indicating decided progress in the right direction, and it is the more remarkable because there was about 3000 miles more of road in operation in 1874, and, more than all, a very large number of railroads, because of their poverty, were permitted to get into very bad condition in 1874. On the other hand, there was no such trying season in 1874 as the first part of 1873, when in three months we reported no less than 423 accidents against 276 in 1874. Again, among the economies of the railroads during the past year, one of the commonest has been an economy in the number of trains—even those doing an increased business usually doing it with a decreased train mileage—while there has been especially an economy in the faster trains. New railroads, where no inducements could attract a large passenger traffic, having to work at the least possible cost, have often taken off their express trains, or run them at moderate speeds and at intervals somewhat corresponding to the actual demands of traffic; and not a few lines have had only mixed trains, and these sometimes not so often as once a day. The effect of low speeds in reducing the number of serious accidents is very great, and is exemplified in the South, where, with most imperfect railroads and rolling stock, accidents which hurt anybody are comparatively rare, though "run offs" are so common that they are hardly noticed.

A comparison of the causes as well as the nature of accidents is given below:

	1874.	1873.	1874.	1873.
Collisions.....	131	187		
Rear.....	87	182		
Butting.....	12	31		
Crossing.....	23	72		
Unexplained.....			260	392

Deraillments.....	218	315
Unexplained.....	67	72
Misplaced switch.....	51	44
Accidental obstruction.....	45	54
Cattle on track.....	12	111
Broken rail.....	33	19
Failure of bridge or trestle.....	22	11
Malicious obstruction.....	20	26
Breaking of wheel.....	20	21
Breaking of axle.....	16	13
Spreading of rails.....	13	9
Snow or ice on track.....	13	7
Defective track.....	12	10
Defective switch.....	10	30
Failure of coupling.....	8	4
Failure of coupling.....	7	8
Displacement of rail.....	7	16
Open draw.....	6	4
Defective rail joints.....	5	3
Loose wheel.....	4	2
Fall of barge or car.....	4	9
Running through blind siding.....	3	3
Careless stopping or starting.....	3	3
Overloading car.....	3	3
Bad switching.....	2	2
Runaway train.....	1	4
Running over man.....	2	2
Flood over track.....	2	2
Others (one each).....	11	7

Accidents without Collision or Deraillment.....		
Burning of running cars.....	16	2
Boiler and cylinder head explosions.....	15	19
Breaking of parallel, connecting & eccentric rods.....	9	11
Flue collapse.....	4	2
Steam chest explosions.....	2	2
Flue plug blown out.....	2	2
Breaking of bridge.....	2	2
Mass falling on run.....	2	2
Breakage of rolling stock.....	10	19
Accidental obstruction.....	11	11
Malicious obstruction.....	3	3
Unknown.....	64	67
Total.....	978	1,283

The average number of accidents, killed and injured per day for the two years was as follows:

	Accidents.	Killed.	Injured.
1874.....	2.68	0.559	2.13
1873.....	3.51	0.756	3.21

The gain of a life every five days and of eleven sound men every ten days seems to us a result worth rejoicing over and working for, and that appears to be the result of last year's running of trains as compared with the previous years. There are so many disagreeable facts shown in this accident report, however—so many accidents which could have been prevented by a greater exercise of skill, conscientious care and discipline—that railroad managers should not contemplate it with much satisfaction. It might have been worse, it is true, and it has been worse before; but is very much too bad as it is.

Engineers of the Prussian government have made a boring to the extraordinary depth of 4040 feet at Spereberg, a place about 25 miles south of Berlin. Salt was met at 283 feet, and continued to be found at the lowest depth.

United States Capital Seeking Canadian Investments.

The *Ottawa Citizen* says:

We learn that representatives of a leading iron firm in the United States came to Ottawa last week with a view to organizing a company to develop the valuable iron mines owned by our enterprising fellow citizen, Mr. A. H. Baldwin. They visited the mine, tested the ore, and expressed themselves highly satisfied as to its richness, and the extent of the deposit. They are practical men, having large experience in the manufacture of iron and a thorough knowledge of working mines and constructing furnaces. They are now prepared to commence work at the mines by building workshops, furnaces, etc., at a cost not exceeding, for the present, \$175,000. They are willing to take stock in the company themselves to the extent of \$75,000, on condition that the county of Ottawa and this city will each grant a bonus of \$25,000 in aid of the enterprise; the balance of \$50,000 stock to be taken up by the public. In addition to this a working fund of \$50,000 will be required, making a total capital of \$225,000. The exact place where the furnaces and workshops are to be built has yet to be decided, but we are given to understand that some of the works connected with the enterprise will be located in Ottawa, from which the supplies for the company will also be derived, if the manufacturers are met in a liberal spirit by our citizens. In the present condition of our city finances, we cannot urge the corporation to grant the bonus required, but we need scarcely remind them that it would be well to give the company such encouragement as they can afford to bestow on an enterprise, which, if successful, will contribute immensely to the future prosperity of the capital. There is a tide in the affairs of cities, as well as of men, which taken at the full leads on to fortune. Ottawa's opportunity has arrived, and we hope it will not be neglected. What the corporation may be unable to do, private capitalists can accomplish. There are two valuable iron locations in the immediate vicinity of the capital, which, if properly developed, will make Ottawa the Birmingham of Canada. The Pacific Railway must be constructed. If the present government decline to build it, the people will give the treasury benches to men who will undertake the work. Immense quantities of rails will be required for the road, and there is no city in Canada possessing greater advantages for the establishment of the rolling mills that will be required to furnish them, than Ottawa. We are satisfied that the company's property in the city will be exempted from taxation for some years to come, but even more substantial aid than that will be required to insure the success of the enterprise. We have contributed liberally toward railroads, and we have found the investment remunerative in the end. A similar result, but in a much larger degree, will follow any aid that may be given toward the development of the mineral wealth in our vicinity, and the establishment of new manufacturing enterprises in our midst.

tween this port and Great Britain and the north of Europe ports contemplate reducing the number of ships employed. The Liverpool paper from which we have quoted says, that the demands of trade are not so exacting that every port in the United Kingdom cannot show a fleet of steamers whose occupation is for the present suspended.

These are, of course, deteriorating in all possible ways—they yield nothing, but act as a tax on revenue, and they suffer from gradual decay; all of which is certainly a mute testimony to the solidity and soundness of the opinion expressed that it is likely to be worse before it mends. The advancing tendency of underwriter rates and of labor, coal and iron in Great Britain is calculated to deprive our English friends of the advantages they have hitherto had in shipbuilding, when a revival of commerce takes place. Even now, Mr. John Roach, our foremost iron shipbuilder, has demonstrated the fact that he can build as good an iron ship as the best Clyde builder, and as cheaply, the quality of the material being equal.

The Iron Mines of Crawford and Dent Counties, Missouri.

The *St. Louis Democrat* publishes the following interesting communication respecting the Benton Creek Iron Mine:

The Benton Creek Iron Mine is worked by the Meramec Iron Mining Company, of which B. W. Lewis, Jr., is president. It ought to be called the Massey Mine, having been entered some forty or fifty years ago by Samuel Massey, the pioneer of iron business in the Meramec region. It is situated directly on the line dividing Crawford and Dent counties. Some 35,000 tons of ore have been shipped from the mine in the last two years, and a mass of ore is now stripped which will turn at least as much more. But little ore is being shipped at present, owing to the depressed condition of the iron trade. The policy of Mr. Lewis, and of Capt. Herndon, superintendent of the mine, is to continue stripping ore and opening cuts into it, in order to be ready for any demand when the iron business revives. To my notion the mine is scientifically worked in the best sense of the term. All the outfit is simple and inexpensive, but effective; and the rule is to follow the ore, without any theory as to where it ought to be, and to get it out to the shipping platform by the shortest road. If science is "the essence of human experience," as Prof. Swallow once said, they have it as the Benton Creek Mine; because experience has proved that their mode of working is best. About twenty men are now employed mainly in preparing for taking out ore when the proper time arrives. In all the cuts more or less ore is encountered, and this is saved if "merchantable;" but many hundreds of tons are thrown out in the common dump as not suited to the market, but which would be regarded as first-class if found in Pennsylvania and other States.

The *St. Louis, Salem and Little Rock Railroad* runs from Cuba, on the Atlantic and Pacific Railroad, to Salem, in Dent county—one of the best built roads in West. A branch about one mile in length has been built by the Meramec Iron Mining Company from this road to the mine, and is of the same excellent construction as the main track. Thus the ore goes directly from the mine to the cars. The iron company owns seventy-five cars.

The Benton Creek Mine property is an immense hill, the dome of which contains the ore now visible, which seems to constitute a sort of rim to a large basin, from 300 to 500 feet in diameter. This basin is rather oblong than circular, and its depth can only be conjectured. The State geologists, I am informed, say that the bottom of the basin will soon be reached, as it is not below the sandstone strata of that region. If the geologists say this they do the State great wrong. I have been under ground far below the sandstone in the Meramec region, in a mine carrying massive ore just like the ore of the Benton Creek Mine, and I know that the sandstone has nothing to do with limiting the depth of the ore. It may be that the State geologists have a theory, and want to make the facts conform; but facts are sometimes stubborn things, and do not conform. I have studied the geology of the Meramec region for the last twenty-five years, getting my facts first, and from them deducing theory. I have seen enough of that region to satisfy me that many of the iron mines are but the "backs" of lodes or veins of indefinite depth; and I have no doubt that the Benton Creek Mine belongs to this class. The basin will, I think, prove to be oblong in shape, the side veins, now separated by a mass of waste material, coming together at the northward and southward ends; but I do not think the bottom of the "deposit," or "pocket" (as I am told the State geologists call it), will ever be reached. I take the whole thing to be an immense lode, or chimney vein, for whose origin it is difficult to frame a satisfactory theory, but which traverses all the formations above the granite. The amount of rich, workable ore is enormous, and will not be exhausted for many years; but as the workings reach to the permanent water level of the "country," the ore will change in character, or rather, the normal or unchanged part of the vein will be reached, and we shall find it sulphurous, with probably copper, lead, silver or tin. In the old Stanton Mine we went ten fathoms below the water level, and found the vein to be "mundic," or sulphureted of iron with a little copper in it, precisely as the Cornish miners told us we should find it. The Benton Creek Mine will probably show the same conditions. It shows no copper or sulphur in the ores now, and will not, in all probability, until a depth of 200 feet or more is reached; but then nature will have her own way, and after a million or more tons of good iron ore shall be taken out, the mine will yield workable ores no longer, but may be of value for other metals.

Depreciation in British Iron Ship Property.

The *Liverpool Commercial Express*, of recent date, states that British iron steamships and sailing vessels have, during the last two or three years, undergone a heavy depreciation; that second hand iron steamers, with all the modern improvements, can be bought 15 to 25 per cent. lower than the prices of last June; that many builders and engineers are short of work, and that all appearances tend to a worse condition of things than now exists. As compared with two years ago, according to the same authority, the depreciation in all classes of British iron vessels is rather under than over estimated at 30 per cent.

The chief of the causes that have operated to bring about this result, is unquestionably overproduction, especially of steamships. A few years ago the opinion was quite general that the rapid development of commerce in all parts of the world would greatly accelerate employment of this class of vessels, and accordingly the capacity for building them on the Clyde and in all the other principal shipbuilding districts of the United Kingdom was utilized to the utmost extent, not only for the British service, but to some extent for the flags of all nations, the United States excepted, our navigation laws forbidding the registration of foreign built tonnage. So rapid was the growth of steamship carriage in the leading trades of Europe that an immense amount of sail tonnage that had formerly been employed there was forced into the trans-Atlantic trade, a pretty good evidence of which has been afforded by the wonderful increase, especially of Scandinavian, Italian and Austrian tonnage, at our ports during the last two years. But even with all this sail tonnage driven out of its accustomed channels, the growth of steamship carriage has been so rapid and the competition so sharp as to lessen the earnings of that class of vessels, the partial failure of the cereal crops in Russia and Southern Europe last year contributing in no small degree to the depression. For example, grain freights from the Danube to England in 1871 were 10/ per quarter, against 6/ to 7/ the present year. Then, also, Suez Canal freights have fallen to 35/ for steamers, out of which 16/ has to be paid for canal dues.

Next, it may be mentioned as an illustration, that vessels for the ore trade, which are especially built, beside having diminished freights, are obliged to pay 10d. per ton for each ship to the Spanish government. In the trans-Atlantic trade the past year has been the most disastrous to steamships ever known. The rates for freight and emigrant passengers have been, most of the time, too low for profit, even for the less expensive sailing vessels, and it is not, therefore, surprising that the principal lines be-

Lake Superior Notes.

We take the following from the Marquette Mining Journal:

The Menominee Furnace, which was built to run on soft wood coal, went into blast May 1st, 1874, and up to the 31st of December had made 4942 gross tons of iron. We have seen it stated, in Mr. Swank's publication, we think, that the experiment of making iron with soft wood charcoal had proved a failure. That such is not the case the above figures fully attest. Nothing but coal from soft wood—principally pine slabs from the lumber mills—was used, and with it the furnace has turned out as large a product as some others that have used all hard wood.

No. 2 stack of the Bay Furnace made last year, in a run of 258 days, 6645½ gross tons—of which 6070 tons were made on the blast commencing May 25th, at which date she was blown in after having been remodeled. Previous to that time her average daily product was not to exceed fifteen tons. For the last four months she has been making a daily average of over thirty tons. No. 1 stack was only in blast a short time last summer and made 1713 gross tons—a total of 8359½ gross tons for both stacks.

A company has been organized to work the opening on the Michigan Iron Company's property, south of Clarkburg. The name adopted is the Union Iron Company, the capital stock of which is \$500,000, divided into shares of \$25 each. The officers are, R. S. Fay, of Boston, president; C. G. Blake, secretary and treasurer; and a board of directors as follows: Messrs. R. S. Fay, E. Breitung, H. J. Colwell, Jay C. Morse, Jas. Pickands, A. A. Ripka and W. L. Wetmore. Recently a drift from the shaft toward the north has exposed a valuable deposit of ore, so that the prospect is believed to be favorable for a good working mine. The property owned by this new company is the south half of section 7, north half of section 18, and north half and northeast quarter of southwest quarter of section 17, town 47, range 28—1000 acres.

The product of the Escanaba Furnace for 1874 was 6335½ gross tons. In the blast from May 1st to January 1st her product was 5772½ tons. A letter from the agent informs us that the affairs of the company are not nearly so bad as has been represented. The iron was not attached, but was turned over to the railroad company under an agreement previously entered into. It was necessary to blow the furnace out for repairs, and we have the assurance that the stack will be lighted again as soon as the repairs can be made. Some of the wood contracts were canceled simply because the company already have a large amount of fuel on hand, and their continuance was not at all necessary. At some of the locations forces are still at work getting in wood. We are pleased to get this report, and hope soon to hear that the furnace is again in successful operation.

The London Fire Service.—A correspondent of the *Herald* sends the following account of the London fire brigade: There are now 50 stations of the brigade in London, and four stations are on the Thames, where steam floating engines are moored. In connection with these stations, which are all in communication with each other by means of the electric telegraph, there are 53 telegraph lines and 85 miles of telegraph, one iron floating barge to carry a land steam fire engine, five large land steam fire engines, 14 small land steam fire engines, 15 7-inch manual fire engines, 56 6-inch manual fire engines, 12 under 6-inch manual fire engines, and 396 firemen. There are 105 fire escape stations and 125 fire escapes. The number of firemen employed on the several watches kept up during the day is 90; the number at night is 181, so that 271 are employed on watch duty every 24 hours. The number sick, injured, on leave or under instruction is usually between 40 and 50. The remaining men are available for general work at fires. During 1873 the calls made on the brigade for a turn out of engines was as many as 1708. Of these 83 proved to be false alarms, and 79 were alarms of chimney fires. Of fires other than chimney fires there were 1548, of which 106 resulted in serious damage, and 1382 in slight damage. In 20 of those fires life was lost, and in 74 of them life was seriously endangered. The number of lives actually lost was 35, of whom 12 were taken out of the burning buildings before death, but subsequently succumbed in hospitals or elsewhere. The total number of calls for chimney fires, and in which no alarm of general fire had been raised, was 3602. In these cases there was no attendance of engines, but only of firemen with hand pumps. The quantity of water used for extinguishing fires in the metropolis during the year 1873 was about 32,500,000 gallons, or 101,000 tons. The working accounts for the year show the expenditure of the brigade to have been nearly \$370,000. Of this between \$180,000 and \$185,000 went in salaries and wages, and nearly \$10,000 for men's clothing; something under \$2500 for payments of medical officers, and about \$2500 in pensions to late officers and to widows.

A valuable deposit of quicksilver has been found in the State of San Luis Potosi, in Mexico.

The West Cumberland Iron and Steel Company—a British corporation—report a loss of \$190,000 on the business of last year.

The Parliament of Victoria, Australia, has granted a sum of \$50,000 to be expended in "prospecting" for gold, coal, and other minerals.

The British Admiralty have purchased, for \$80,000, the steam whaler *Bloodhound*, with the view of sending her with the Arctic expedition.

The Peninsular and Oriental Steamship Company, the rival of the American Trans-Pacific line, has paid dividends amounting to 7 per cent. for the past year. It has a fleet of 122,000 tons, and assets amounting to \$23,680,000.

Special Notices.

Notice of Dissolution of Copartnership.

The copartnership heretofore existing between J. J. HOGAN, A. L. CLARKE and J. HENRY SLEEPE, under the firm and style of HOGAN, CLARKE & SLEEPE, was dissolved by expiration of its term on the 31st of December, 1874. The affairs of the late firm will be settled by either of the undersigned. J. J. HOGAN, ADDISON L. CLARKE, January 1, 1875.

The undersigned have entered into a copartnership, under the name and style of HOGAN & CLARKE, and will continue in the Commission and Jobbing Hardware business at 105 Broad Street, Boston. J. J. HOGAN, A. L. CLARKE.

We have a large stock of Washoe Tool Mfg. Co.'s Picks and Eyes, which we are closing out at a low price. The firm of H. A. ROGERS & CO. (consisting of H. A. ROGERS and W. C. DUYCKINCK) is this day dissolved. The affairs of said firm will be exclusively liquidated and adjusted by W. C. DUYCKINCK, at the old store 50 and 52 John St. New York, January 18, 1875.

The subscriber will continue to conduct the business of importing, manufacturing and dealing in every variety of Railway, Machinist and Engineers' Supplies at the old store, 50 and 52 John St., New York. New price list now in press.

W. C. DUYCKINCK.

Wanted to Manufacture

Articles of Hardware either of Brass or Iron. For further information, Address, W. F., Office of *The Iron Age*, 10 Warren St., N. Y.

Wanted,

Hardware or similar goods to sell on commission to the jobbing trade in the Northwest. First-class references furnished. Address *Traveler*, Care H. H. Chandler & Co., Newspaper Advertisement Brokers, Chicago.

To Manufacturers of Agricultural Implements.

We can furnish at very moderate cost, machines for threading bolts that will give you perfect work at a fourth the cost of poor work. Patent adjustable dies cut 16,000 bolts without varying from exact size of the tap. Fine taps and dies a specialty. The Lightning Screw Plate.

WILEY & RUSSELL MFG. CO.,

Screw Cutting Machinery Tools,

Greenfield, Mass.

A business man, with twenty years' experience, wishes to connect himself with a well established wholesale house or manufacturing interest where his capital and services would meet a fair return. Iron, metals &c. preferred.

Address, C. B., P. O. Box 3256, New York.

Partner Wanted in a Large Machine Shop and Foundry.

A rare chance for purchasing a part of or whole half interest in the oldest engineering, mechanical and manufacturing establishment in the South.

The shops are the largest south of the Ohio river, and situated in one of the rapidly increasing towns of Tennessee, and in the midst of the coal, iron and mining districts, fully equipped with the latest improved and most valuable machinery, largely stocked, running full time, with a good business established. Cash capital required, \$30,000 to \$40,000.

Address, in first instance, W. C., Office of *The Iron Age*, 10 Warren St., N. Y.

NEW BUSINESS.

A firm with facilities and extended trade connections desires to manufacture new articles, staple hardware preferred, of wood or iron. Drop forgings a specialty. Address, with full particulars, H. Draver 161, Greenfield, Mass.

Wanted,

A situation as bookkeeper or cashier of an iron works, a hardware business, or in the coal trade, which the advertiser understands in all its branches. Highest references of character, capacity, &c.

Address, H. D., Office of *The Iron Age*, 10 Warren St., N. Y.

A. PURVES & SON,

Scrap Iron & Metals, Machinery, Tools, Shafting & Pulleys, Steam Engines, Pumps & Boilers, Copper, Brass, Tin, Habbit Metals, Foundry, Facings. Best Quality Ingot Brass. Cash paid for all kinds of Metals and Tools.

HARDWARE.

FOR SALE in the best business part of Jersey City, a first-class Tool and Hardware business. Established about 25 years, and doing a fair business.

Apply to H. LUTGEN, 57 Montgomery St., Jersey City.

Wanted,

By an experienced man, who has a large acquaintance with the wholesale and retail hardware and house-furnishing merchants throughout the West, a position as traveling salesman. Can furnish good city references. Address, E. A. C., Office of *The Iron Age*, 10 Warren St., N. Y.

Special Notices.

PARTNERS WANTED.

More working capital needed. Grounds, Shops, Tools and Machinery, all in good working order. A rare chance for parties desirous of engaging in the manufacturing business. Correspondence solicited. Address, B. WHITING, Ashland, O.

THE

Fletcher's Blast Furnace Co.,

Manufacture

CHARCOAL PIG IRON,

Exclusively from New Bed Pure Magnetic Ore, suitable for Bessemer, Malleable and Car Wheel purposes, or for foundry use where very soft and strong iron is required.

Analysis of Average New Bed Pure Ore. Metallic iron.....68.240 Oxygen with iron.....26.010 Water......380 Insoluble silicious matter.....4.330 Sulphur, practically none......038 Phosphorus......038 Alumina......280 Lime......140 Undetermined matter and loss......592 100.000

Analysis of No. 1 Bessemer Pig. Undetermined matter and loss.....194 Silicon.....1019 Carbon.....3.821 Phosphorus......048 Sulphur......140 Calcium......94.538 Metallic iron.....100.000

Witherbees & Fletcher,

Port Henry, Essex Co., N. Y. Furnace at FLETCHERVILLE, near Mineville, N. Y.

Merchant Iron or Nails

Wanted in exchange for 300 tons No. 1 Wrought Scrap Iron.

GILCHRIST & GRIFFITH,

Mount Pleasant, Iowa.

By BISSELL & CO.,

Successors to R. T. HAZELL & Co., Store No. 94 Rensselaer Street. ONE REGULAR SALE OF HARDWARE, CUTLERY, FANCY GOODS, &c., will be held on TUESDAY and FRIDAY throughout the season. CASH ADVANCES made on CONSIGNMENTS without additional charge.

McHaffie Direct Steel Castings Co.

STEEL CASTINGS, Solid and Homogeneous, guaranteed to stand a Tensile Strain of 25 tons per square inch. An invaluable substitute for expensive WROUGHT IRON FORGINGS or for Iron Castings, where great strength is required. Office, 1000 Arch Street, PHILADELPHIA. Send for Circular and Price List.

Charcoal Blast Furnaces.

Having during the past 10 years constructed and put in operation a number of the most successful Charcoal Blast Furnaces in the country, and having a competent corps of workmen constantly in my employ, I am enabled to offer advantages in constructing or remodeling upon the latest and most approved plans. Examinations of Furnace Property made and reported upon when solicited. Correspondence promptly attended to.

J. M. WHITE, Engineer,

22 W. Alexander St., Rochester, N. Y.

MANUFACTURERS

desirous of introducing their goods to the British and Continental Markets, are advised to insert advertisements in the newspaper "IRON," published every Saturday, at 99 Cannon Street, London, E. C.

SCALE: First 3 lines, 3/4; every additional line, 10d. Price, 6d. per Copy, or 30/ per annum, inclusive of postage to the United States.

An iron worker of large experience in this country and England, with the best testimonials as to character and capacity, wishes an engagement as manager or foreman of a mill or forge. Has had 20 years' experience in the manufacture of bars, hoops, plates, sheets, and puddle steel.

J. L.,

Office of *The Iron Age*, 10 Warren St., N. Y.

Salesman Wanted

To sell a leading Hardware article on commission to the trade of the Middle States. Liberal commissions and prices.

Address, W.,

Office of *The Iron Age*, No. 10 Warren St., N. Y.

Hardware Salesman

Wanted.

Who can control a hardware trade in New York, Pennsylvania, Connecticut or Vermont.

Address, F. & R.,

Office of *THE IRON AGE*, 10 Warren St., N. Y.

An Experienced Mechanical Engineer, familiar with estimating and designing Propeller and general Marine Machinery, Locomotive, Corporation Pumping Engines, &c., will shortly be discharged. Would like a superintendency or charge of a drawing room.

Address, for reference, A. E. W.,

114 Fulton Street, N. Y.

SPECIAL NOTICE.

I have three patents for Dies, Machinery, and Tools for making Augers and Bits, each running seventeen years; dated as follows: Dec. 19, 1865; January 31, 1866, and July 3, 1866. There is a special claim on each of the Dies. All persons infringing on said patents will be held responsible to the extent of the law. Russell Jennings, DEER RIVER, Conn., Sept. 7, 1874.

Business Chances. HARDWARE.

A man with from \$15,000 to \$25,000 cash, can connect himself with an old established Commission and Jobbing House in Boston, where capital is only required to extend the business. Address in full name, P. O. Box 3205, Boston.

A PARTNER WANTED

by the 1st of January, 1875, in an established Hardware business, who can put in from \$30,000 to \$35,000, either cash, or stock suitable for jobbing trade.

For particulars, address, B.,

Office of *The Iron Age*, 10 Warren St., N. Y.

Special Notices.

MERCANTILE AGENCY.

For the sale of Hardware or any Mercantile Business. Stores of all kinds for sale and wanted. Parties desirous of going into business cannot do better than to address this agency. Also clerkships secured, best of reference required. Parties wishing clerks or assistants, please address this agency. Those seeking situations include \$1 for registry fee, which also entitles them to three months' registry, if not successful on first application. Address, JOHN J. HARRING, Box 1633, Binghamton, N. Y.

For Sale.

MACHINIST TOOLS FOR SALE CHEAP.

Owing to the removal of our factory, we will at once dispose of such tools generally found in a first-class machine shop. Send for catalogue and prices. Parties desiring to start a jobbing shop can find no better location and easy terms. Address,

SUPT. BURRITT, 330 Delancy St., New York.

For Sale or Rent.

Hibernia Iron Works.—This property is situated in Chester county, on the Wilmington and Reading Railroad, four miles north of Coatesville; it consists of a rolling mill for making fine or boiler plates; a forge with four fires and run-out; a grist and saw mill; also farm of about 300 acres, with fine mansion house. Will be sold or rented, separate or together, on easy terms to a good tenant. Apply to James H. Bull, West Chester, Pa.

For Sale.

An extensive deposit of Iron ore, (Red Hematite) superior quality, 2½ miles from Selma, Rome and Dalton Railroad, in Shelby county, Alabama. Specimen sent on application. Terms, \$3000, cash. Address, James T. Leeper, Columbiana, Ala.

IMPORTANT

To Bridge Builders & Contractors for Iron Work.

FOR SALE, About 20,000 pounds of Patent Rolled Hexagon Nuts, reamed and chamfered for Bolts from 1½ to 1½ in. diameter, at a very low price.

JOHN MCANERNY & CO.,

Dealers in

Railway & Steamship Supplies, 63 BROADWAY, N. Y.

PUBLIC SALE Of a Valuable Iron Property

In Augusta County, Virginia.

The undersigned Commissioners, in pursuance of a decree of the Circuit Court of Augusta county, Virginia, in three Chancery causes (brought on to be heard together), in which Dennard & Son, Raymond & Campbell, and Eyer, Cooper & Co., are respectively Plaintiffs, and the Buffalo Gap Iron and Steel Company and others, Defendants, will sell at public auction, on

Wednesday, the 3d day of March, 1875, at BUFFALO GAP, in the aforesaid county, all the

REAL ESTATE

of above named company. Said Real Estate embraces a tract of

MINERAL LAND,

containing about 1450 acres, with TWO VALUABLE IRON FURNACES thereon; and a FARM of about 600 acres. These two parcels of land will be sold separately.

The mineral tract lies in and around a depression in the North Mountain range, through which the Chesapeake & Ohio Railroad passes, known as Buffalo Gap. The veins of ore on this land have been partially developed, owing to the fact that the furnace heretofore operated on it was plentifully supplied with good ore from the neighborhood, delivered at the furnace, at an average price of \$3.50 per ton.

Competent mineralogists and miners, who have examined the openings made on the property, express the opinion that ore exists on it in very large quantities.

There are quarries of good limestone on the land; and much of it is well timbered.

THE FURNACES

are immediately on the Chesapeake & Ohio Railroad, in the great Iron Region of Virginia, and about 125 miles from the Coal Fields of West Virginia, which are traversed by said road. They are ten miles west of Staunton and 14½ miles west of Richmond.

FURNACE No. 1 has been in blast for several years, and has operated well. No. 2 is entirely new, indeed not quite complete; but the materials for its completion are on hand and the work can be done in a few days.

Each of them has an Iron Jacket Stack, built on iron columns. No. 1 is 35 feet high and 9 feet across the bush, to which is connected a Player Hot Oven. No. 2 is 40 feet high, 10 feet across the bush, with a Raymond & Campbell Hot Oven.

There are three Cylinder Boilers, 40 feet long, three feet in diameter, and in excellent condition; a 60 horse power engine with two blowing cylinders, capable of making 7 lbs. of blast to the square inch, and in complete order; two water tanks with a capacity of 60,000 gallons, supplied from a never failing stream; a steam fire donkey engine, connected with several hundred feet of gum hose; an ample bridge or stock house, casting houses and two calcining kilns.

In fine, the Furnaces are, in all respects, first-class. Around them is a village of 25 or 30 houses, embracing a handsome and spacious manager's residence, offices, storehouses, shops, laborers' houses and a neat chapel.

herebefore mentioned adjoins the tract of Mineral land. It is well watered and timbered; and is very productive. Improvements consist of a large BRICK BUILDING, Grist Mill, Saw Mill, Tenants' Houses, a large Barn, and all the other out houses usually found on a good farm in the Valley of Virginia.

Parties proposing to buy are invited to examine the aforesaid property before the day of sale. Mr. John Tierney, who is in charge of the furnace at Buffalo Gap, will take pleasure in showing the property; and the undersigned Commissioners, who may be addressed at Staunton, Va., will take pleasure in answering inquiries concerning the same.

At the same time and place will be sold whatever PERSONAL PROPERTY the Buffalo Gap Iron and Steel Company may have on their premises at Buffalo Gap.

Terms on which aforesaid property will be sold are as follows: Ten per cent of the purchase money will be required in cash, 15 per cent. in four months, and the balance in three equal annual installments from the day of sale, with interest from the last named day. For all deferred installments of purchase money, the purchaser will be required to give bonds with approved personal security, and the title will be withheld as ultimate security.

GEORGE M. COCHRAN, JR., THOS. C. ELDER, Commissioners of Sale,

For Sale, &c.

FOR SALE,

Hardware and Stove Store,

A good complete stock, doing a cash business, situated in a thriving town in Central Ohio, at the crossing of two important railroads. Will sell part cash, balance on good time. Address, A. & F., Box 194, Bellefontaine, O.

MACHINERY FOR SALE.

The following machinery, &c., being that recently owned by the

American Rolled Nut & Tube Co.,

at very low prices. Consisting of several sets of

ROLLS, HOUSINGS, BED PLATES, &c.,

for Rolling Nuts, including machines for finishing

1 train of 8 in. Guide Rolls.

Large quantity of

Rolled Nuts for Bolts,

from 1½ to 2½ in. diameter, reamed and burred ready for use. Lot of

STANDING PLATES.

These nuts have been extensively used, and are regarded as equal to any made, and will be sold much under the market value. Will also sell a

Fourth Interest in the Patent for making these Nuts.

It is confidently believed that nuts can be made on this plan cheaper and better than on any other yet adopted, and may be rolled of any length or size that may be required. All of the above machinery is nearly new and in complete order. For further information, apply in person or by mail to

N. C. NEWTON,

Metropolitan Iron Works, Richmond, Va.

For Sale.

A Zinc Mill, consisting of Rolls, Furnaces, Shears and Tools, all in complete order, ready to run at once. Situated near New York on leased ground. Lease covers buildings, engine and boilers, and is a valuable one, having privilege of extension. For full particulars, address,

Box 2166 N. Y. P. O.

For Sale!

Hardware Business

In a growing manufacturing town, one of the best locations in Vermont. Business well established and profitable. Stock about \$10,000, in good order. This affords an excellent opportunity for a party with small capital to secure a paying business. Address, W. R. BIXBY & SON, Vergennes, Vt.

LOWE & THOMASSON,

Chattanooga, Tenn., Dealers in

MINERAL LANDS.

Surveys Made and Titles Investigated. Parties desiring information or wishing to purchase ore or coal lands within the States of Tennessee, Alabama or Georgia, are respectfully requested to communicate.

We have For Sale Very Cheap

Two of the

Finest Charcoal Properties

in America. Brown Hematite Ore, 56 per cent. Metallic Iron, and less than 1-20th of 1 per cent. of Phosphorus. Car Wheel Iron can be made for \$16 per ton. Also, 6400 Acres Bituminous Coal Lands, for which part payment will be taken in Northern Pacific R. R. Bonds.

To Rent.

First and third floors—together or separate. Brick building 18x20, well lighted and the best business location in the city. Light power will be supplied if desired, or parties can furnish their own if preferred. Address, with particulars,

H. D. STANLEY, Secretary,

Bridgeport, Conn.

For Sale or Rent on Easy Terms

A four story brick factory 46x60 ft. with unloading wharf power of about 25 horse-power, auxiliary steam engine of 20 horse-power. Adjoining are office, barn and other outbuildings. Situated near depots of three railroads, and lines of boats to New York and Philadelphia. Every facility for manufacturing and getting goods to market at cheapest rates. Apply in person or by letter to either

JOSEPH W. ALSOP,

ROBERT N. JACKSON, } Executors.

CHARLES E. JACKSON, }

Middletown, Conn.

FOR SALE.

An 8½ inch mill train for making Merchant, Band and Hoop Iron. Will be sold cheap.

Apply to W. W. JONES,

Near the Lehigh Valley Railroad Depot,

Allentown, Pa.

For Sale,

quantity, twenty-five thousand tons, rapidly effected.

There is very little doing in the market for Bituminous Coal, and prices are nominally unchanged. Our quotations are as follows: Cumberland, \$6.75 @ \$7; West Virginia, \$7.25; American Gas, \$7 @ \$7.75; Pennsylvania and Westmoreland, \$6.75; James River Steam, \$6.25 @ \$6.50; James River Carbonite, \$9 @ \$9.50; American Canal, \$12 @ \$14.

Foreign Coal continues to rule quiet, and prices remain unchanged. We quote: Liverpool House Canal, \$18; Liverpool Gas, \$11; Newcastle Gas, \$8; Scotch, \$8; English Canal, \$17 @ \$18.

The Coal transported over the Cumberland Branch Railroad during the week ending Jan. 23, 1875, amounted to 473 tons, as against 1764 tons shipped in the corresponding period of last year, showing a decrease of 1291 tons. Over the Cumberland and Pennsylvania Railroad, for the same period, the shipments were 15,080 tons, against 19,997 tons shipped in 1874; a decrease of 4917 tons. The aggregate amount of Cumberland Coal shipped by the various companies so far this year amounts to 59,349 tons.

We have received from the office of the Cumberland and Pennsylvania R. R. Co. the following table showing the statistics of the production of Cumberland Coal:

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1871.	907,511	580,196	1,487,707	1,414,404	88,035	96,385	1,317,698	1,317,698	820,380	1,717,698	1,046,127	2,855,477	2,855,477	814,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	88,441	131,954	1,317,947	616,108	22,091	1,285,965	619,267	92,021	1,916,514	96,986	593,660	323,132	8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Francisco; Mr. N. Corwith, of Chicago, Messrs. Corwith & Co., of Galena; Mr. F. W. Billing, of the Germania Co., and by the superintendents of the various reining works. The U. P. R. R. has with equal courtesy reported the figures of lead transportation eastward from Ozden, showing shipments of 3500 gross tons of pig lead, and 15,000 tons of bullion, which verifies exactly the statistics given independently by the various desilvering works.

Assuming that the country holds about the same stock on hand now as in January, 1874, these production figures also show our consumption for the past year.

TOTAL UNITED STATES SUPPLY, 1874.	
Imported into New York.	Gross tons.
From other Eastern ports.	11,750
U. S. government sales.	18,000
Missouri produced.	15,000
Iowa, Illinois, Wisconsin.	5,500
(Utah and Nevada.)	8,000
California (desilvered lead).	8,000
Salt Lake City.	3,500
Omaha.	5,800
Chicago.	2,300
N. Y. Newark, Phila.	6,500
Total U. S. supply for 1874 from all sources.	68,500

The U. S. government about the middle of June authorized the sale of all its pig lead in store, except 2000 tons—which put into the market prospectively about 7000 tons of good ordinary foreign lead. The immediate effect of this action was to depress prices lower than they have been for several years. The total sales thus far have amounted to 4125 tons. The government business has been conducted in a careful and judicious manner, keeping pace with the market and securing fair prices without injuring trade. It appears that of the 7000 tons first reported as coming into market the government had used considerable, so that only about 2300 tons more will be disposed of beside 1500 tons of bullion to be remelted into pigs. It would appear at first sight that our supply would have been inadequate to the demand last summer had it not been for government lead, but in reality it was only the fact of that lead being here that checked shipments of domestic to this point and discouraged capitalists from turning their attention to this article.

Another point worthy of note is the increased receipts of lead from San Francisco, which have, in 1874, been more than double that of previous years. This fact shows such a severe deflection of the lead trade into new channels that our Eastern refiners may justly regard California with jealous fears as a dangerous competitor. The refining and desilvering branch of the lead business offers some facts of such deep import that they cannot be overlooked. There are, in all, about twenty establishments of this kind in the country, and yet among them we note six commercial failures in 1874, beside the fact that two others have stopped work, and still two more are offered for sale. The percentage, therefore, of refining and desilvering works that have apparently found it to be a non-paying business is nearly one-half, which leads us to one or all of several conclusions. 1st. That the business is overdone, in which case the ones that remain will make it pay if too many new concerns do not organize. 2d. That the business is one which requires long and thorough training in the part of workmen, as well as superintendents, in all its branches, and that the money lost in it has been expended in purchasing experience which can only be of benefit to those who still continue the work. 3d. That wastage and shrinkage, loss of interest and commissions enter so largely into this business as to deceive and delude novices, and thereby cause them to compete in buying bullion at prices which old stagers know to be ruinously high and demand of profit. Whatever the truth in the matter may be, the results show that the business must be conducted with more than usual prudence and knowledge.

The importation of lead into New York has decreased about twenty-five per cent. from last year. This is owing to the facts that government has applied the demand for ordinary lead, and that much of the corroding lead is now shipped direct to the Atlantic seaports. The demand for ordinary foreign at present comes chiefly from cartridge manufacturers who receive the drawback on all lead exported in cartridge form. The English market during the year has experienced wide fluctuations. On the 1st of January common English lead was quoted at \$24 but fell to a shade below \$23 before the 1st of June, thereafter rallying to \$24, the closing quotation of the year. The production in England has decreased within a few years time 17,000 tons, or nearly one-quarter, so that peace in Spain or American industry and railroads must be the means of making good the deficiency or lead will range from seven to eight cents per pound rather than from six to seven. In conclusion it may be said that the outlook is brighter than it has been. The effects of the panic have about disappeared; business stands on a firmer basis now than it has any time for three years past, and the country looks hopefully to Congress for honest, wise and speedy legislation in the financial question.

The Puddler's Strike.

The Pittsburgh Commercial, of the 23d inst., says: Pursuant to notice given yesterday, a general assemblage of the boilers of the city, union and non-union men, gathered upon Fifth avenue and for some time blocked the sidewalks. The meeting had been arranged to be held in the hall, fourth floor of the Dispatch building, but not half of those gathered could obtain entrance. At two o'clock the room was filled to its utmost capacity, nearly all standing, there being but few chairs to occupy. Some feared that the joists of the floor would not hold the great weight, while it was evident to all that there could be no business satisfactorily transacted with such a jam. Soon after two o'clock the chairman of Union No. 1 not having appeared, it was moved that Mr. William Corbett take the stand.

The motion was adopted, and Mr. Corbett stated the difficulty under which they labored. He suggested that a larger hall would have to be procured for the meeting.

On motion a committee, consisting of Messrs. George Dean, Cosworth, Spink, Stewart and the chairman, was appointed to visit old City Hall and see if that could be had.

The committee at once started on their mission and found Mr. Joseph Caskey, superintendent of markets, in his office. He stated that it was out of his power to allow the use of the hall, as the Duquesne Greys had a lease of it from the city. It was with Colonel Campbell to allow its use. The office of Colonel Campbell was visited, but he was not in, so that the committee had to give it up. They returned and reported to the meeting in the Dispatch building, and a secret session was then held.

It is understood that arrangements will be made for a mass meeting at a future time.

While congregated upon the sidewalk the men freely talked about the strike, and it appeared that most of those present were for holding out. Some said they were able to hold out six months, and claimed that the manufacturers would be glad to have them go to work soon. Others said that if the manufacturers did not start, orders for iron would go elsewhere and they, the boilers, could follow the orders.

One intelligent man, who was by trade a boiler, but not now of them, said that if we should come to a specie basis a reduction of wages must come. He thought the fact that two mills were running now in this vicinity helped to keep the strikers together, as they held that if those mills could pay \$6 per ton the others could. The speaker thought that some mill owners, owing to the want of orders for railroad supplies, did not want to start, while others, including those supplying hoop iron, could afford to do so, and wanted to do so, but were deterred by their agreement.

There were some complaints that workingmen not of the boiler class had gathered to take part in the meeting, and dissatisfaction was expressed thereat.

Holmes & Lissberger Assets and Liabilities.

Some time after the panic Holmes & Lissberger, metal dealers, at No. 295 Pearl street, failed, and, as it was understood, with large liabilities. The firm expressed a hope that they would be enabled to keep up, but it now appears that they have been obliged to go into bankruptcy. There is some difference among the members of the firm, Lissberger alone making his petition, Samuel Holmes, the other partner, having refused to join. Proceedings have been taken with a view to learning why Holmes also should not be placed in bankruptcy. The petition, as far as Lissberger is concerned, is voluntary, and involuntary with respect to Holmes. The following is a copy of the schedule:

SECURED CREDITORS.	
J. Bertchman	\$37,000
Market National Bank	12,138
National Park Bank	11,300
Total	\$60,438
UNSECURED CREDITORS.	
F. L. Curtis	\$11,970
J. L. Curtis	12,000
Citizens' Bank of Waterbury	35,492
F. W. Hurst	30,892
W. Hall	17,180
Schoenberger Smelting and Refining Co.	15,000
Webster, Lewis & Co.	13,750
Crooke Brothers	30,528
Canadian Bank of Commerce	10,773
W. & F. P. Currier	5,454
People's Bank of New York City	11,659
Williamite Trust Company	11,112
Tenth National Bank of New York City	2,131
State Bank of Elizabeth, N. J.	5,715
Taylor & Co.	8,000
Snow & Son	4,214
John Roach & Son	16,074
Hilmer & McGowan	1,922
Edward Beck & Co.	6,800
N. S. Simpkins, Jr.	73,249
Sutherland & Conkey Mining Company	28,820
Cookson & Co.	1,800
Kuhn, Loeb & Co.	9,648
Sanders Brothers, London, England	8,000
Sutherland Insurance Company	1,000
S. Hartson & Co.	3,500
Lackawanna Iron and Coal Company	1,000
Morton, Hiles & Co.	9,858
Bank of New York	1,781
Chas. M. Fry, in gold	8,000
New York Guaranty and Indemnity Co.	6,900
F. M. Steller	216
J. B. Elliman	750
S. B. Parsons	100,000
H. F. Hamill	2,835
E. Ketchum & Co.	5,000
Drexel, Morgan & Co.	5,000
E. W. Barrett & Son	77
Daniel Chancery	5,874
An "unknown" creditor	5,973
Metropolitan Bank of New York City	30,394
Shoe and Leather Bank	6,590
Kuhn, Loeb & Co.	5,767
American National Bank of Hartford	5,892
Holmes & Parsons	31,179
Total unsecured creditors	\$580,548

Accompanying the petition is a schedule of the personal property of the firm. It consists of certified checks and promissory notes, which amount to \$25,305.95.

The schedule of the firm's choses in action consists of debts due the firm, and, according to the schedule, they amount to \$348,601.73. The alleged debtors are scattered all over the country. Among them are the Salt Lake Railway Company and Farrel F. and M. Company, Ansonia, Conn. The debt of one of these is stated at \$37,000, and that of the other amounts to \$1343.38.

The following is the individual schedule of Lazarus Lissberger:

CREDITORS HOLDING SECURITIES.	
Farrel F. and M. Company	Debt. Security.
Bank of New York	\$6,600 \$2,600
	89,452
	\$92,092
UNSECURED CREDITORS.	
Crooke Brothers	\$11,945
W. W. Draper	30,000
William Houston	30,000
H. Lissberger	8,000
Total unsecured creditors	\$79,945

Mr. Lissberger's personal property, according to his schedule, amounts to nothing. His individual choses in action are as follows:

DEBTS DUE ON OPEN ACCOUNT.	
Mortimer Hendricks	\$270
D. Lissberger	12,000
M. Lissberger	15,000
Albert Frank & Brother	6,300
Total	\$33,570

STOCKS IN INCORPORATED COMPANIES AND INTEREST IN JOINT STOCK COMPANIES.

Watwick Mining Company, 800 shares; cost, \$800; value unknown.
Purcine Petroleum Company, 150 shares of stock; value unknown.
Purcine and Allegheny Oil Company, 500 shares; value unknown.
President Petroleum Company, 200 shares; value unknown.
Huron Silver Mining Company of Montana, 200 shares; value unknown.

Failure of Malin Bros., of Philadelphia.

The failure of Malin Brothers, iron manufacturers, of Philadelphia, which occurred last Wednesday, has created a profound feeling of sympathy and regret among the iron dealers of that city. The liabilities of the firm amount

to \$500,000. They have issued a statement, showing that their assets exceed their liabilities by about \$207,000. On the strength of this, they ask for an extension of time from their creditors of 9, 12, 15, 18, and 24 months. They claim that their assets are all perfectly good, and, in case the extension is granted, they promise to add \$100,000 to their capital. The firm, which is among the largest in Pennsylvania, have been doing a business amounting to about \$3,000,000 a year. Their acceptances are mostly in large amounts, and their creditors are comparatively few in number. They owe large sums to one or two smaller Lehigh companies, and are heavily in debt to several firms in Schuylkill county. To one man in Philadelphia the embarrassed firm owe \$40,000. The Mount Carbon Rolling Mill Company are creditors for \$18,000. Malin Brothers were sole agents for the Schuylkill Iron Company, the Dauphin and Monocacy furnaces, and the Moslem, Ringgold, North Pennsylvania and Uhler Iron Companies, and these are their chief creditors. The cause of the failure was the investment by the firm of an undue proportion of their means in various iron enterprises. They owned large interests in four pig iron foundries, and the demand for iron having almost ceased, they found a large part of their capital locked up at a critical moment. They also accepted largely, and, as it appears, unwisely, for a large number of firms. The immediate cause which precipitated the failure was the sudden demand on them, by two foundry men in Philadelphia, for sums amounting to \$60,000. A bank in Philadelphia which had promised to carry \$35,000 for them, also suddenly called in that amount. Before suspending, they paid \$43,000, and they claim that if the bank had sustained them they could have weathered the storm. The members of the unfortunate firm are young men of high reputation for integrity and business ability. The failure created considerable consternation in Philadelphia, and when it was first announced wild rumors of failures among firms of the highest position found credence for a time.

Samuel Fulton & Co., iron pipe manufacturers, of Conshohocken, who failed during the panic for a large amount, have, within a week, failed to meet their payments on an extension granted at the time of their first failure.

Tanks.

Water, when stored in tanks or other closed vessels, seems to undergo a sort of fining process, by which many of its impurities are thrown down as a sediment upon the bottom of the vessel. Sailors assert that water clears itself by working after the manner of wine or liquors. Though this is not strictly true, yet it is a fact that most of the impurities held mechanically suspended are thrown down and the water in time becomes fit for use.

If we can store water, exclude dust and give some time for settling, the water is pretty sure to be improved in quality. If the cistern is open there are two evils to be apprehended. Dust will find its way into the water and foul gases accumulate in the cistern. These will be absorbed by the water, and so render it unfit for both drinking and cooking. This absorption of gas by water is of much more importance than most people are aware, as a very large quantity being taken up, and as the water does this with rapidity, we should not allow it to have access to foul air.

We have, in a former number, called attention to the evils of the ordinary underground country cistern, with its cover of boards, and the dirt and foul matter which finds its way into it. This evil is aggravated by the fact that there is no way of cleaning except by pumping the water out. It being very rare to provide any means for letting the water flow out of its own accord, consequently the labor involved in this operation of cleaning is so great that it is only undertaken at great intervals and is rarely as thorough as it should be.

Of the materials for tanks, we have, in the first place, stone, earthen ware, enameled ware; then brick-work and brick laid in masonry. Their value is very much in the order given, though a perfect tank would seem to call for an interior surface covered with a vitreous enamel. This is, however, only possible where but few gallons of water are to be stored.

Among the woods, the best materials for holding water are pine, oak, and, possibly, a wood known at the West as cucumber wood. Pine will often keep water better than a brick cistern or tank, because some kinds of water dissolve various substances out of the cement and become hard, while pine, and oak, also, contains practically no soluble substances, and water can be kept in them with out becoming hard or getting a disagreeable taste.

Many country houses have the large underground cisterns of which we have spoken, and are usually supposed to be provided with every convenience necessary in the way of water supply. Yet, instead of having to pump water into the house, and then carrying it into different rooms in pails, it should flow in pipes. This is not difficult; small tanks on the top of the house are as easily filled from the roof as those on the ground. It is very easy, when there is water on the top of the house, to bring it down to the kitchen in pipes. In many places, too, power is obtainable, and the small tanks are easily kept filled, but the great difficulty usually mentioned is the tank itself. If of wood, what will become of it when partly empty, and if lined with zinc or lead, the danger of poisoning is feared. The matter of shrinkage is more easily disposed of, we think, than most persons are aware of.

In the first place we think that thoroughly washed molasses hogsheads, wine, or alcohol barrels, and the like, are the very best water tanks, because they can be made tight and kept so. Painted outside and partly filled with water they will hardly shrink; the water will be per-

fectly protected from dust, from foul vapors and there will be no danger of metallic poisoning. Nor will the annoyance of iron rusted clothes be encountered. Where iron tanks have been used this latter evil has often been a very serious one.

If a single cask or hogshead is not large enough, two or more can be used, connected by pipes at the bottom. Each one should be rented separately by a small pipe. Protected by paint, and closed so that evaporation cannot take place, a small quantity of water will protect them from shrinkage, and save very much of the annoyance of above-ground cisterns. Water from the roof should be led to them directly, so that any shower may fill them before running into the cisterns below ground. Always provide means for allowing the flow from the roof to run off without entering either cistern or tanks, because it frequently happens that after some time of dry weather dust and dirt accumulates in the gutters, and until this has been washed out it is not best to attempt to save this water. Beside providing overflow pipes a waste pipe taken from the very bottom of a tank is very convenient for them; much of the dirt may be drawn off and clearer water left above. Where a bottom waste pipe can be provided for large cisterns, much dirt can be got rid of by stirring the bottom a little, and then opening the waste way much dirt flows out, while a large part of the water is saved. In some houses the tanks are placed on a large sheet of zinc, which has its edges turned up an inch or an inch and a half, so as to form a shallow basin. This is inclined a little, and at one corner is connected by a small pipe with the waste pipe. Any leakage thus finds its way off without going down through the house, and perhaps doing damage to plastering and furniture.

The cost of setting up a tank of this sort we have described, is not necessarily expensive. An ordinary tinsmith can do it if a plumber is not to be had. In fact any one who can set a pump and make the connection may set up a tank in an upper part of the house, bring in the water to it by a pipe from the caves and carry another pipe down to the kitchen. Connections with the wood are not difficult, and if the stove dealer or tinsmith cannot achieve a wiped joint, a very good though not very handsome one may be made with the soldering iron. A flange of sheet lead around the end of the pipe gives means for making a joint with the wood. We would advise our country friends to attempt a job of this kind whenever they can, as if successfully carried out makes a demand for more of the same sort.

The size of a tank to hold the water falling upon a given roof is a matter that should not be altogether neglected. The average rainfall in the Northern States may be taken at about 48 inches per year. That is, if all the water that falls on a given surface in a year were saved, and none lost, we should have a depth of about 4 feet. This supply is not very evenly distributed through the year. Sometimes we get 2 or 3 inches in a day, or even more, and then there are several weeks without a shower. Could we make our tank large enough to hold all the rainfall on a roof we should be very well off, but as we cannot always do this we must make some calculations as to the amount of water that falls, and what we wish to use per day. The average amount of rain falling in the United States may be taken for at about 36 inches, or say 3 inches per month. For most parts of the country this will be an outside estimate, for in some months there will be no rain, and in others it may reach even 6 inches. Now, getting the length and breadth of the roof, we multiply them together and find the surface upon which we are to gather our water. This will be exact if the roof is not of too sharp a pitch. When the roof is sharp the size on the ground plan must be taken. Now, the half the number of square feet on the roof multiplied by 7.4 will give us the greatest amount of water in gallons which we can expect to catch in any one month, while the average will be one-half of this amount. If we have a roof 20 feet by 40, from which we mean to take water, we shall have 800 square feet, half of this is 400, which, multiplied by 7.4, is 2960.0 gallons as the greatest amount of water we are likely to obtain, and 1480 about the average quantity that we shall have for storage. By a simple calculation like this we get at the quantity of water to be expected. If in this case we find room for say four 63 gallon casks we find that we shall have storage for 252 gallons, or say one-sixth of the water that falls. The remainder will then be available for the cistern below ground. If there was room for but one of the 63 gallon casks, we could then use about 2 gallons per day the year round, and never run dry save in the most extreme cases. Bearing in mind the fact that there are occasional months of drought, and that our storage must, if possible, be large enough to make up for this, we can easily arrive at some idea of what amount can be used daily, and what would be needed to take us over seasons of drought.

Fever Germs.

The recent deadly outbreak of typhoid fever at Darwin, England, has occasioned an interesting controversy in the papers, in which the latest discoveries and hypotheses on the subject of the origin and propagation of febrile diseases have been, in a more or less popular form, introduced to public notice. The question was broached by Dr. Tyndall, who, with his usual vivacity, declared his acceptance of the conclusions of an eminent observer to the effect that the organisms which are assumed to be the immediate cause of fevers are, in the first instance, developed from the fluids of the body subject to the disease, and that, therefore, the origin of such diseases is independent of surrounding miasmata or emanations from putrefying sub-

stances, however much the condition which these induce may predispose to them. Dr. Tyndall pointed to the mucous membranes of fever victims as full of altered blood corpuscles, which subdivide into small fungus-like bodies, sending out filaments which have received the same name as similar appendages in fungi. Typhoid and other fevers—which have each their peculiar "micrococci"—would thus seem analogous to the fermentation produced by the yeast plant, the original germs or seeds being, on the theory adopted by Professor Tyndall, evolved from the living blood corpuscles by a process of development. Dr. Lionel S. Beale, whose authority in matters of this kind is much higher than that of Dr. Tyndall, insists on the great practical importance of this question, independent of its great scientific interest. That the poison of fever grows and multiplies and increases its kind like other living things is, he says, now beyond controversy; although it is still a matter of dispute among original investigators whether it is a microscopic fungus originating without, or a living particle arising within and from the living matter of man's body itself. The latter view is that which Dr. Beale holds in common with Dr. Tyndall, but he also insists "that we human beings are alone responsible for" the production of these germs, "and for their maintenance and spread; that, therefore, a State of civilized society is conceivable in which fever germs would neither multiply nor arise, and, in the event of their being introduced *ab extra*, would themselves certainly perish, instead of damaging or destroying the higher life." "Fever germs," he continues, "will not be developed direct from filth, but by permitting people to live year after year in open defiance of well-known sanitary laws, the generation of fever poison in their bodies is favored, while its free growth and multiplication if imported is reduced to a certainty. It is therefore our aim to prevent people from falling into that condition of health which favors the organization and propagation of contagious fever poisons in their bodies." Further, although "we may successfully and without fear contend with fever germs if we only preserve our healthy powers of resistance, hundreds of human organisms are, through defective sanitary arrangements, being prepared for invasion."

"Bad air and sewage, the adjacent dunghap," concludes Dr. Beale, "may be all perfectly free from fever germs, but nevertheless will certainly bring about chances which will render many of those exposed to their influence the ready victims of disease. While, therefore, it is desirable, by the use of disinfectants and by other means, to destroy existing fever germs with all possible speed, it is certainly of far higher importance, as regards the welfare of the people, that we should do our utmost to press upon authorities the necessity of providing pure water and efficient drainage wherever men congregate. Good water and well-arranged sewers render impossible such a calamity as that which we have now to deplore at Over Darwen. Even though the inhabitants of a town well drained and supplied with good water should be fully exposed to the assaults of hosts of fever germs in their highest state of morbid activity, they would suffer no injury."

The Lewistown True Democrat says: The Standard Crucible Steel Company, at Logan, in this county, two weeks ago, completed the forging and boring of the great Hitchcock gun, about which so much has been said within a year. It was made in pieces or rings, which were shipped to Massachusetts, where the rings will be welded together, making a complete and immense cannon, the total weight of which will not be less than 42,000 pounds. The bore is nine inches in diameter. One of the pieces thus made and shipped weighed 4500 pounds. The work of manufacturing 100 passenger car axles is likely to go on. The tests made have proven satisfactory, in showing that axles of sufficient strength can be manufactured, although the figures we gave in a recent issue were not entirely accurate. Another test was tried about ten days ago. A solid weight of 1715 pounds was dropped upon an axle from an altitude beginning at 25 feet, and on the fourteenth blow, from an altitude 32½ feet, the axle broke. This, however, demonstrated an amount of resistance considerably in excess of what was required.

The Burlington Hawkeye says: Among the other pleasant occasions which marked the holidays, the friends of a B. & M. baggage man presented him with a patent trunk lifter. It is made of steel and brass. Two clamps catch the trunk at either end, and a turn of a knob in the hand of the baggage man pulls both straps out by the roots, while, at the same time, an iron ball, weighing nine pounds, hammers away at the bottom of the trunk, and a neat, three-jointed, self-acting rake, with twelve teeth, reaches in as quick as a hole is made and sweeps from end to end of the trunk, finally emerging through the lid, where it clinches, and, by a sudden backward jerk, turns the trunk inside out. No baggage man should be without it.

The New Brighton News says: The steel works in Beaver Falls is a fixed fact. A deed has been executed to three Pittsburghers and one Cincinnati for the land lying between the cutlery and gas works. The proprietors will be down shortly for the purpose of bringing plans and specifications of the proposed buildings. They have ample capital with which to do business, and propose to erect the works at once. They will manufacture all kinds of springs, saw plates, &c., and will do a heavy business. This is thought to be one of the best factories yet brought to this valley.

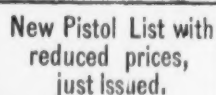
A turret ship of 1800 tons, 185 feet long, 44 feet beam, and drawing 6 feet 6 inches of water, has been constructed in Liverpool for the Argentine government.

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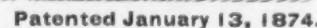
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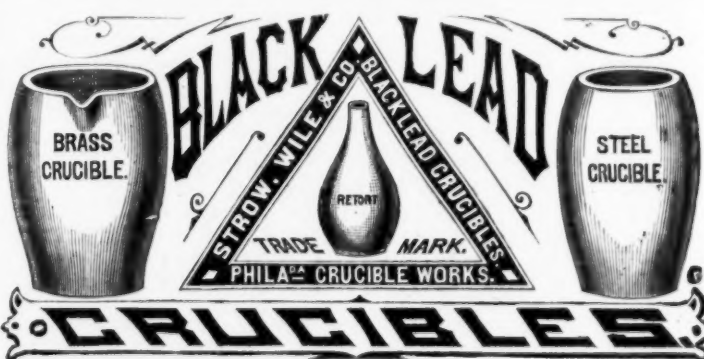
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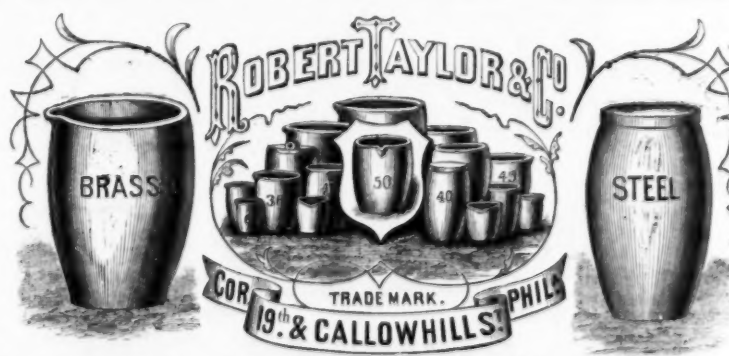
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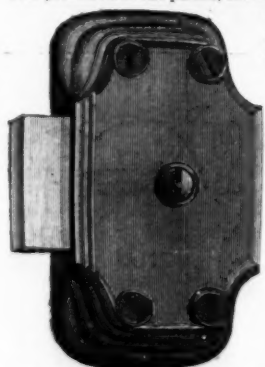
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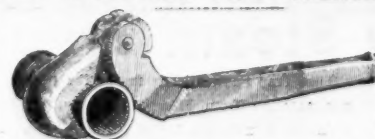
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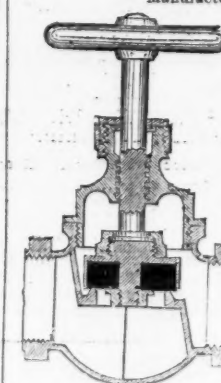
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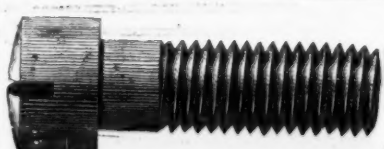
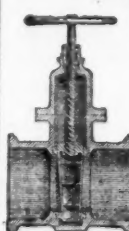
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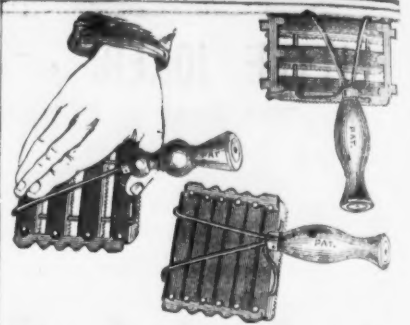
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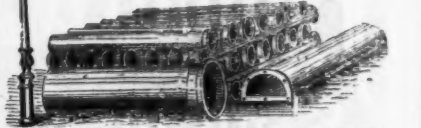
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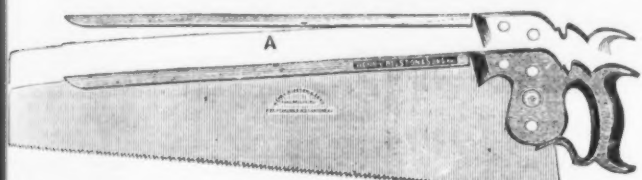
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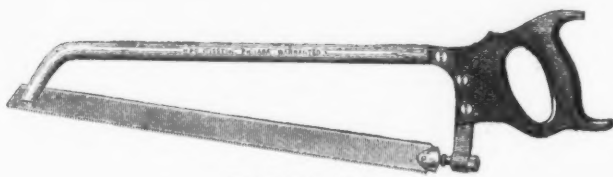
SHEET STEEL, and all Articles made from Sheet Steel.

SAWS OF EVERY DESCRIPTION.

Also, FILES, TOOLS, Etc., and all kinds of Labor Saving Implements for keeping Saws in perfect order.



Hand Saw with Moveable Back—can be used with equal facility for either Hand or Back Saw.



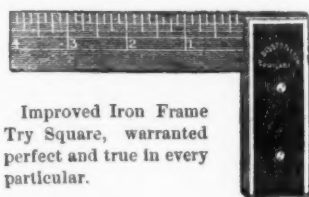
Pork Packers' Saw.



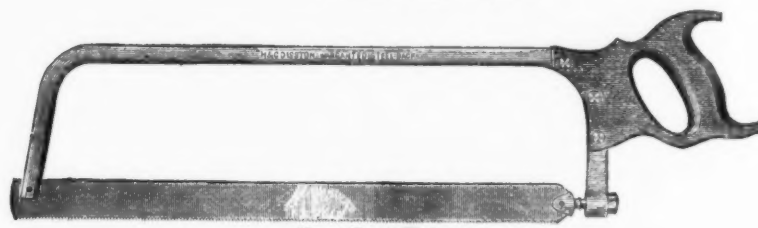
Improved Pruning Saw and Knife,
Patented August 29, 1873.



Mitre Box Saw.



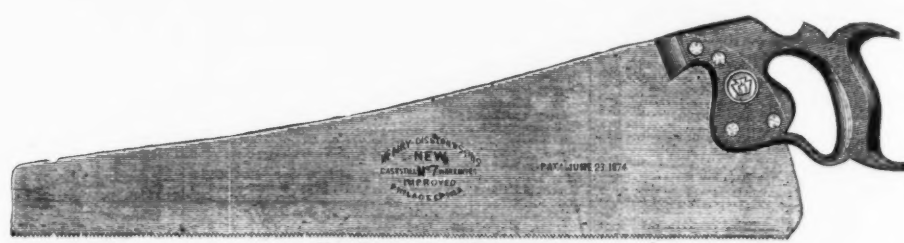
Improved Iron Frame
Try Square, warranted
perfect and true in every
particular.



No. 1 Butcher Saw.



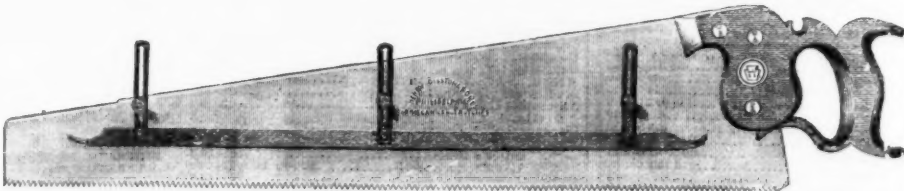
New Patent Skew Back Hand Saw.



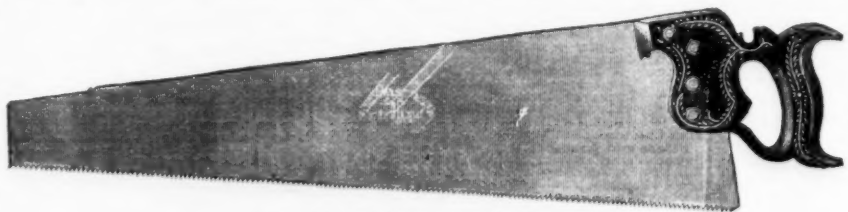
New Patent Skew Back Hand Saw.



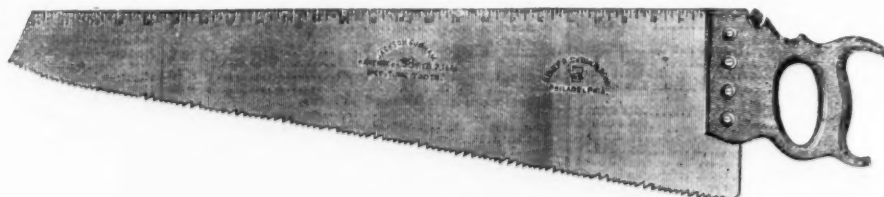
Hand Saw with adjustable handle. The thumb screws in the handle operate on the butt of the saw blade, and can be so adjusted as to give the blade any desired pitch.



Patent Adjustable Gauge Saw for sawing tenons, kerfing, or any work where the cut is required to be of definite depth. Will pay for itself in one day. Try it and be convinced. Remove the gauge and use as an ordinary saw.



Game Cock Hand Saw—a perfect beauty.



A cheap Saw, fully guaranteed. Six tools in one. Adapted to farmers' or plantation use. A Rip and Cross-Cut Saw, Square, Rule, Straight Edge and Scratch Awl combined.



California Butcher Saw, with clock spring blade and steel back.



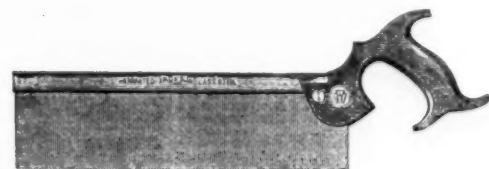
Table Saw.



Compass Saw, Keystone Tooth, it cuts with or across the grain with equal facility.



Hack Saw. The blade in this saw is reversible, an advantage which will be readily appreciated by mechanics.



Dove Tail Saw.



New York Wholesale Prices, January 27, 1875.

HARDWARE.

Anvils.	
Wright's, 14c, 12c, 10c, 8c, 6c, 4c, 3c, 2c, 1c, 1/2c, 1/4c, 1/8c, 1/16c, 1/32c, 1/64c, 1/128c, 1/256c, 1/512c, 1/1024c, 1/2048c, 1/4096c, 1/8192c, 1/16384c, 1/32768c, 1/65536c, 1/131072c, 1/262144c, 1/524288c, 1/1048576c, 1/2097152c, 1/4194304c, 1/8388608c, 1/16777216c, 1/33554432c, 1/67108864c, 1/134217728c, 1/268435456c, 1/536870912c, 1/1073741824c, 1/2147483648c, 1/4294967296c, 1/8589934592c, 1/17179869184c, 1/34359738368c, 1/68719476736c, 1/137438953472c, 1/274877906944c, 1/549755813888c, 1/1099511627776c, 1/2199023255552c, 1/4398046511104c, 1/8796093022208c, 1/17592186044416c, 1/35184372088832c, 1/70368744177664c, 1/140737488355328c, 1/281474976710656c, 1/562949953421312c, 1/1125899906842624c, 1/2251799813685248c, 1/4503599627370496c, 1/9007199254740992c, 1/18014398509481984c, 1/36028797018963968c, 1/72057594037927936c, 1/144115188075855872c, 1/288230376151711744c, 1/576460752303423488c, 1/1152921504606846976c, 1/2305843009213693952c, 1/4611686018427387904c, 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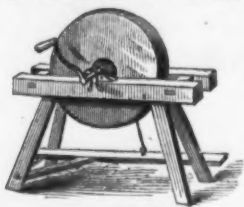
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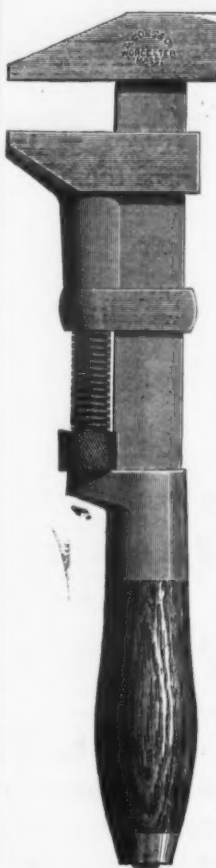
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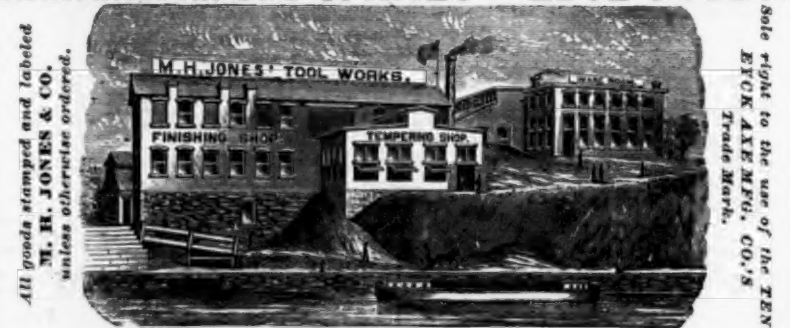
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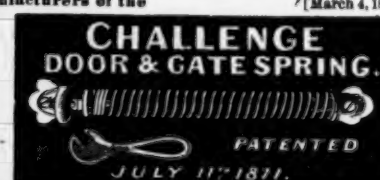
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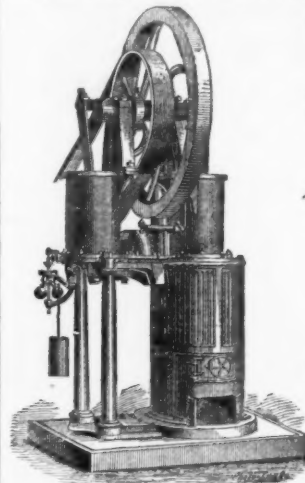
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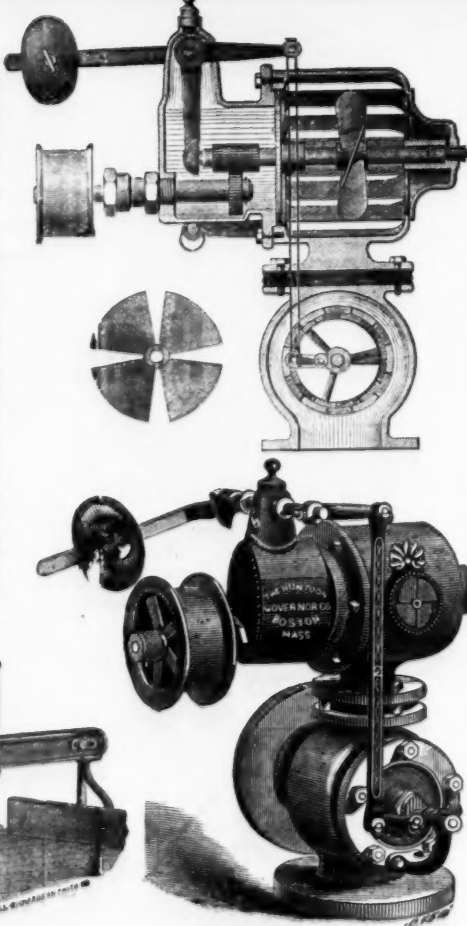
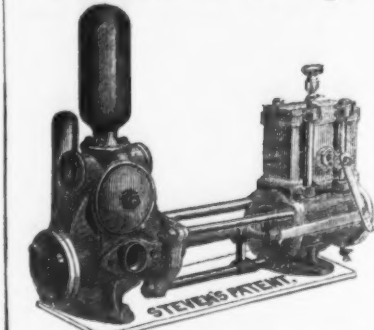
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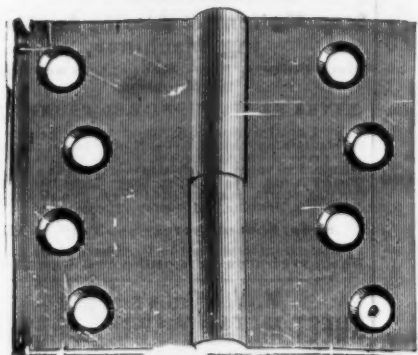
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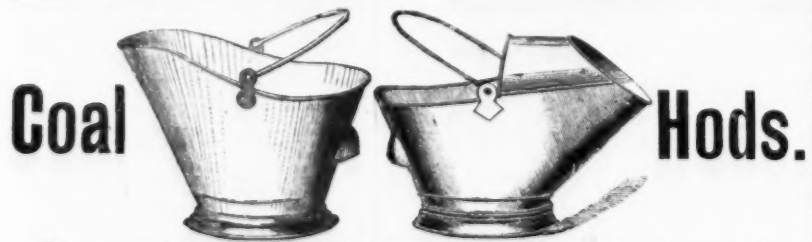
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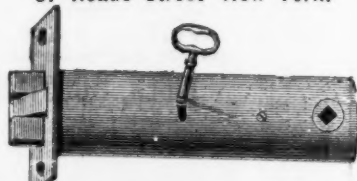
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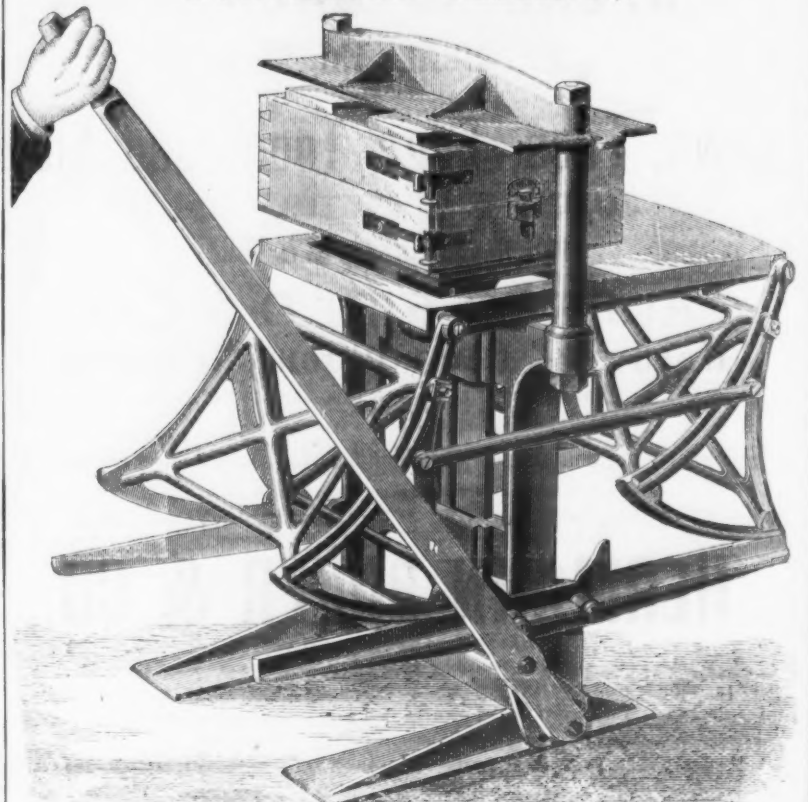
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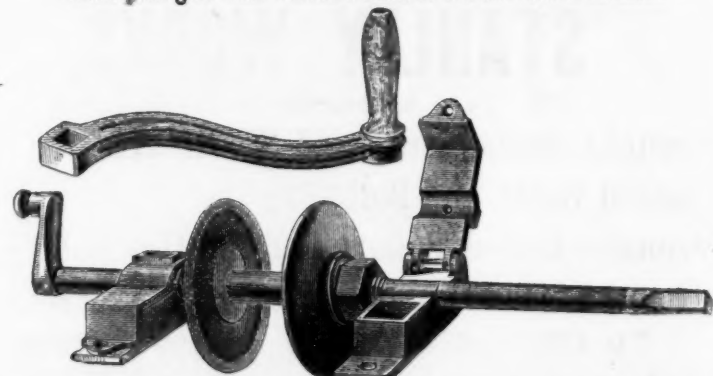
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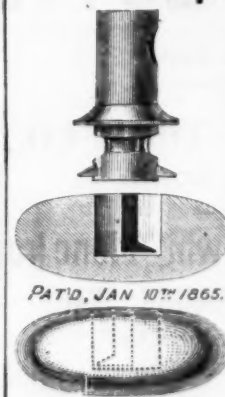
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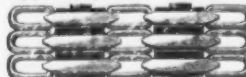
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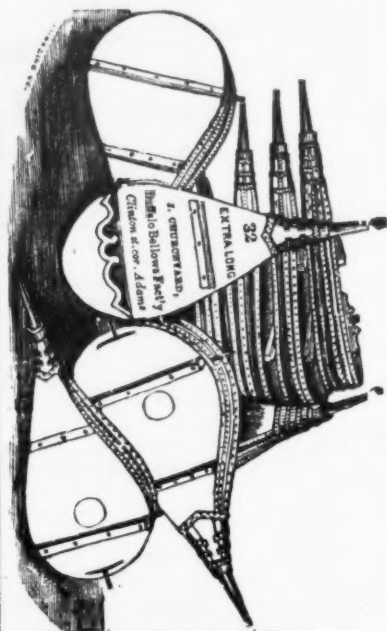
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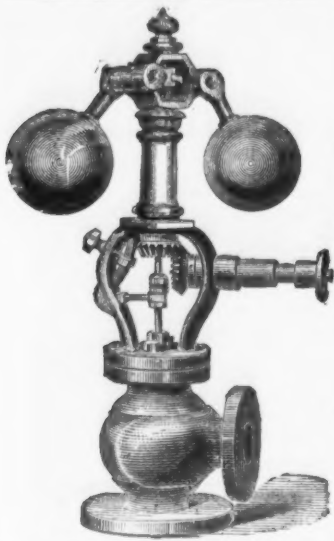
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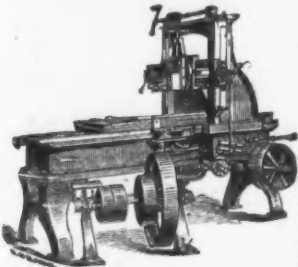
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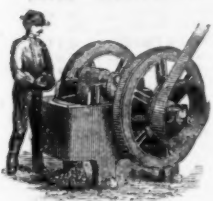
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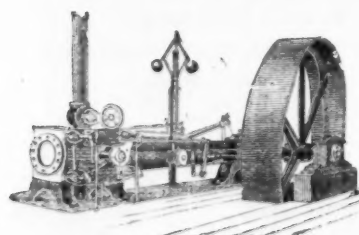
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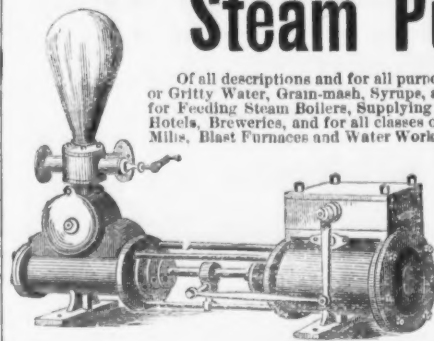
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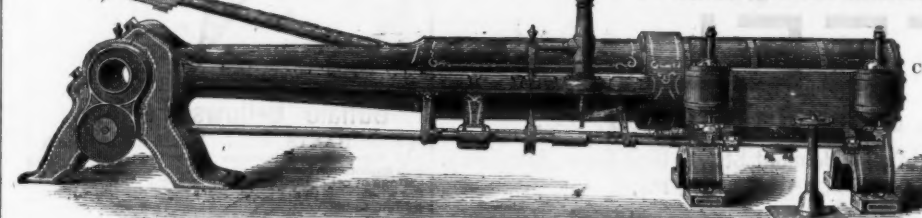
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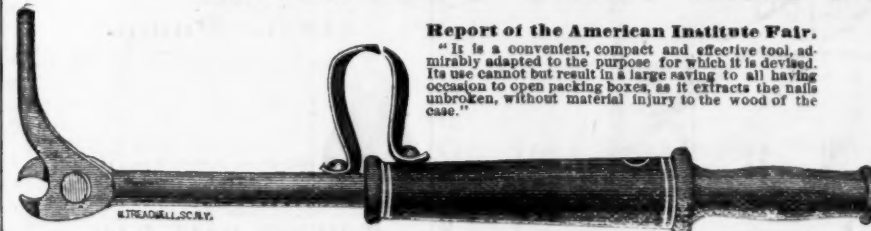
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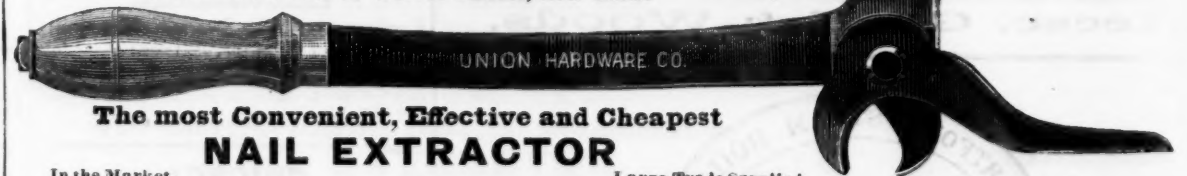
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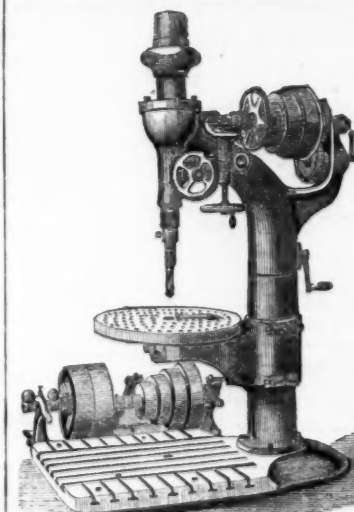
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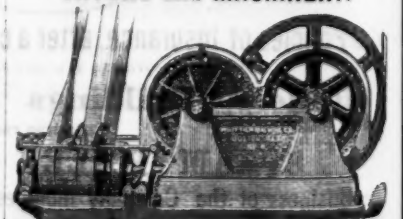
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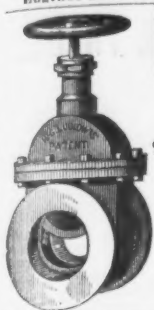
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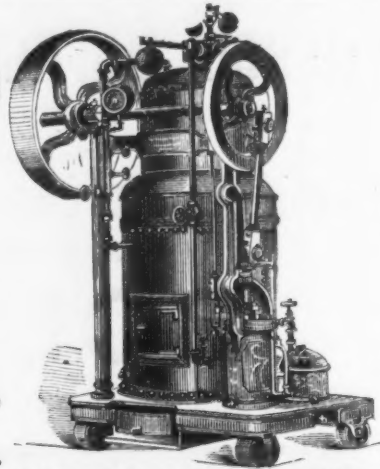
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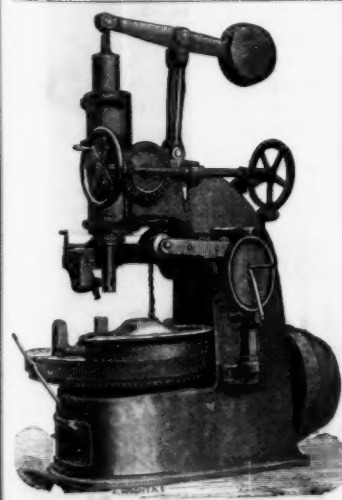
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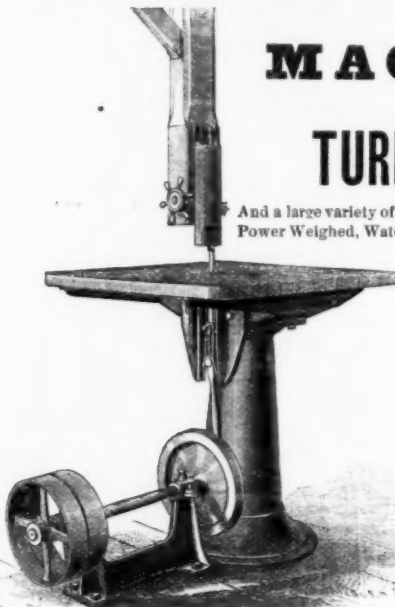
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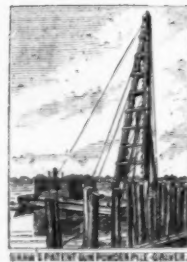
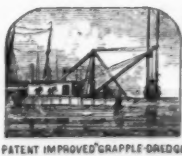
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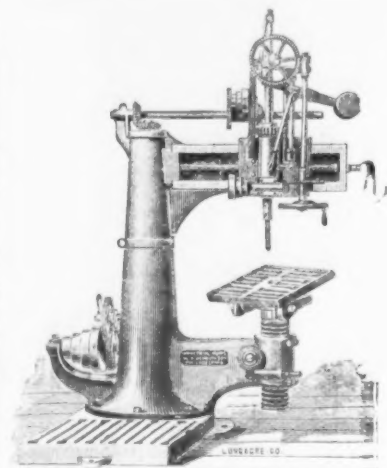
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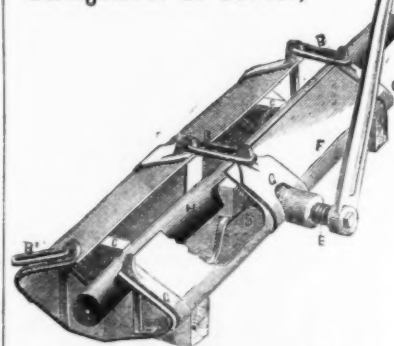
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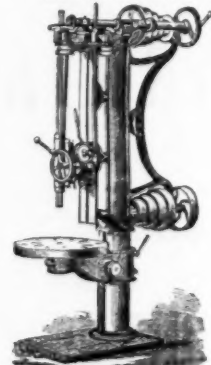


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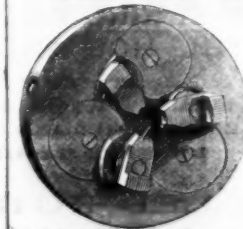
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